

SCHOOL GARDENS:

Meeting Curriculum Expectations and Embedding Environmental Education Through Authentic, Hands-On, Experiential Learning

**Written by: Shirley Niemi, BA, BEd, MEd, OCT, PQP Candidate
Primary Teacher, Upsala Public School**

*A How-To Book
for Creating a
School Garden
at your School*

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THE VISION FOR EE IN ONTARIO

“Ontario’s education system will prepare students with the knowledge, skills, perspectives, and practices they need to be environmentally responsible citizens. Students will understand our fundamental connections to each other and to the world around us through our relationship to food, water, energy, air, and land, and our interaction with all living things. The education system will provide opportunities within the classroom and the community for students to engage in actions that deepen this understanding.”

Shaping Our Schools, Shaping our Future, p.4 (as adopted in Acting Today, Shaping Tomorrow, 2009)

APPRECIATIONS

Thanks to Cheryl Lysak, Principal at Upsala Public School, for her encouragement, support, and advice during both the garden project and the creation of this book.

Thanks to all the students, staff, parents, and community members from Upsala who supported our garden project from the beginning.

Thanks to our funding partners (See Chapter Nine), without whom this project would not have been possible.

Special thanks to my husband, Larry, who has the good fortune (or misfortune) to be married to a teacher. Without (much) complaint, he picked things up for me, let me borrow his truck and trailer to deliver items to Upsala, cut wood for garden stakes, drew up plans, made the garden benches, delivered cans for recycling, and let me borrow his tools. His most recent job is to create a “wildlife deterrent” (see Chapter Thirteen – Other Ideas and Plans).



GREEN IDEAS

Look for these ideas throughout this book. They are examples of how you can save money and reduce, reuse, and recycle.

WHAT IS ENVIRONMENTAL EDUCATION?

“Environmental education is education about the environment, for the environment, and in the environment that promotes an understanding of rich and active experience in, and an appreciation for, the dynamic interactions of:

- The Earth’s physical and biological systems;
- the dependency of our social and economic systems on these natural systems;
- the scientific and human dimensions of environmental issues;
- the positive and negative consequences, both intended and unintended, of the interactions between human-created and natural systems.”

Shaping Our Schools, Shaping our Future, p.6 (as adopted in Acting Today, Shaping Tomorrow, 2009)

ACKNOWLEDGEMENTS AND WORKS CITED

I want to acknowledge sources for this book, but also companies that helped us with our garden. It is quite heart-warming to see how many companies and businesses will donate an item or service when they know it is for kids. Thanks to all who helped us!

Breukelman's Potato Farm – donated seed potatoes.

Chimo Building Centre, Thunder Bay – delivered lumber to Upsala from Thunder Bay (300 km round trip) and did not charge a delivery fee.

Landale Gardens, Thunder Bay – donated “big feet” concrete stepping stones.

Vibert Forest Products, Upsala, ON – donated a load of wood chips, delivered.

Mado Trucking, Upsala, ON – donated a load of sandy loam, delivered.

Upsala residents who donated seeds, tools, labour, and time.

Upsala school students who are eager to learn and willing to help!

Authors of books listed in Annotated Bibliography, Chapter Twelve

Ontario Ministry of Education, *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools* (2009).

Shaping Our Schools, Shaping Our Future: Environmental Education in Ontario Schools. Report on the Working Group on Environmental Education (June, 2007).

Square Foot Gardening by Mel Bartholemew (see Chapter Five).

Westcott-Gratton, Stephen – Article: *Get the Dirt* - from Canadian Gardening magazine – Special Issue 2010 (see Chapter Five).

If I missed you or your company name here, I apologize.

Contact me if you have questions or need help:

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CURRICULUM CONNECTIONS

I thought about how entire teams of curriculum experts employed by the Ontario Ministry of Education work on the seemingly endless and increasingly voluminous curriculum documents we use in our teaching. Then I remembered that in creating this book there is just me. That brought into perspective the fact that I cannot possibly list all the ways a garden can be embedded into the curriculum. To make those connections you will need to: **Think outside the box; look at the bigger picture; think about what is good for kids; and remember that this book is meant to get you started-- it is not the be-all and end-all.**

The ideas for connecting the garden to the Ontario Curriculum Expectations are limitless! While I have included some ideas under the Chapter on “Curriculum Connections,” listed some in the Annotated Bibliography, and have shown some curriculum connections throughout this book, there are many, many more that can be made with a little thought and ingenuity (and maybe Google).

To get you started, look for the icons throughout this book for a quick reference to the curriculum expectations covered by the specific garden activity:



CURRICULUM CONNECTIONS

Mathematics – Big Ideas



CURRICULUM CONNECTIONS

Science and Technology – Big Ideas



CURRICULUM CONNECTIONS

Health and Physical Education – Big ideas



CURRICULUM CONNECTIONS

Language Arts – Big ideas



CURRICULUM CONNECTIONS

Social Studies – Big ideas



CURRICULUM CONNECTION

The Arts – Big ideas

CHAPTER ONE – Getting Started and Making a Plan

This book is a chronicle of my journey as Teacher Lead of a project called “Upsala Public School Children’s Garden,” located at the public school in Upsala, ON (approximately 150 kms. west of Thunder Bay, ON). This book is to give advice to those of you who want to make a difference at your school by creating an outdoor classroom.

I want to say right off the bat that I am no expert. I have always liked gardening. I grew up on a dairy farm. My parents always had a vegetable garden and grew ordinary things like peas, beans, carrots, and potatoes. I have a decently nice bunch of perennial beds in my own yard. However, I rarely bought plants; I would scrounge them from abandoned country houses, or from friends, or even wild from the side of the highway. I have found over the years that some of the best plants to grow are those that are hardy to our climate and grow wild with abandon. One thing I can’t stand in flower gardens is symmetry or exactness (although I do like my grass to be cut in straight lines – go figure!). My mother taught me that in nature plants do not grow in rows or symmetrically and I have always planned my perennial beds so that they looked like they weren’t planned. One year I even dug up a whole flat of newly planted petunias because I thought they looked too orderly when viewed from my deck!

Again, I want to reiterate that I am no expert. Skill at gardening is something that improves with trial and error. I learned not to be afraid to dig something up and move it if it wasn’t doing well or if I didn’t like it where it was. Also, I learned that plants die. Sometimes frost kills them; sometimes bugs do; sometimes they just get old; sometimes your kids play catch in the back yard and step on them! When I lose a plant, I forget about it and move on to something new. When I find a plant that is a hardy, long bloomer, I try to start new ones by dividing the old or by collecting seeds.

A portion of my own yard

The yellow flowers are Rudbeckia (foreground) and —Susan’s Flower” which is really Heliopsis (rear left). I call it Susan’s Flower because my friend Susan gave a chunk to me many years ago. The arbour has Virginia Creeper and Hops on it. They are both very well suited to this climate (Zone 3). The Hops grows from the root each spring, so it grows about 15-20 feet each year!



When I took on the leadership of the garden project at our school in Upsala, I didn’t really know what to do or how to do it. There were existing plantings at the school, including shrubs and fruit trees, as well as the beginning of a —Living Tent” where grapes were planted with the hopes of growing over the old swing set. But, the school yard was enormous, and the area was large, and I didn’t have a clue where to start!

After two years of planning and working on the Upsala Public School Children’s Garden, I have learned several things about starting a school garden that I thought might well be written down to help other schools get started with their own garden projects. As we teachers all know, the Ministry of Education has mandated that Environmental Education (EE) be taught in all subject areas in all grades (Shaping our Schools, Shaping our Future, 2007). EE is intended not to be an add-on, but integrated into the curriculum. We have found that a school garden is an excellent way to teach the curriculum through authentic, real-life learning with an environmental education lens. I hope that this booklet will help you to do this at your own school.

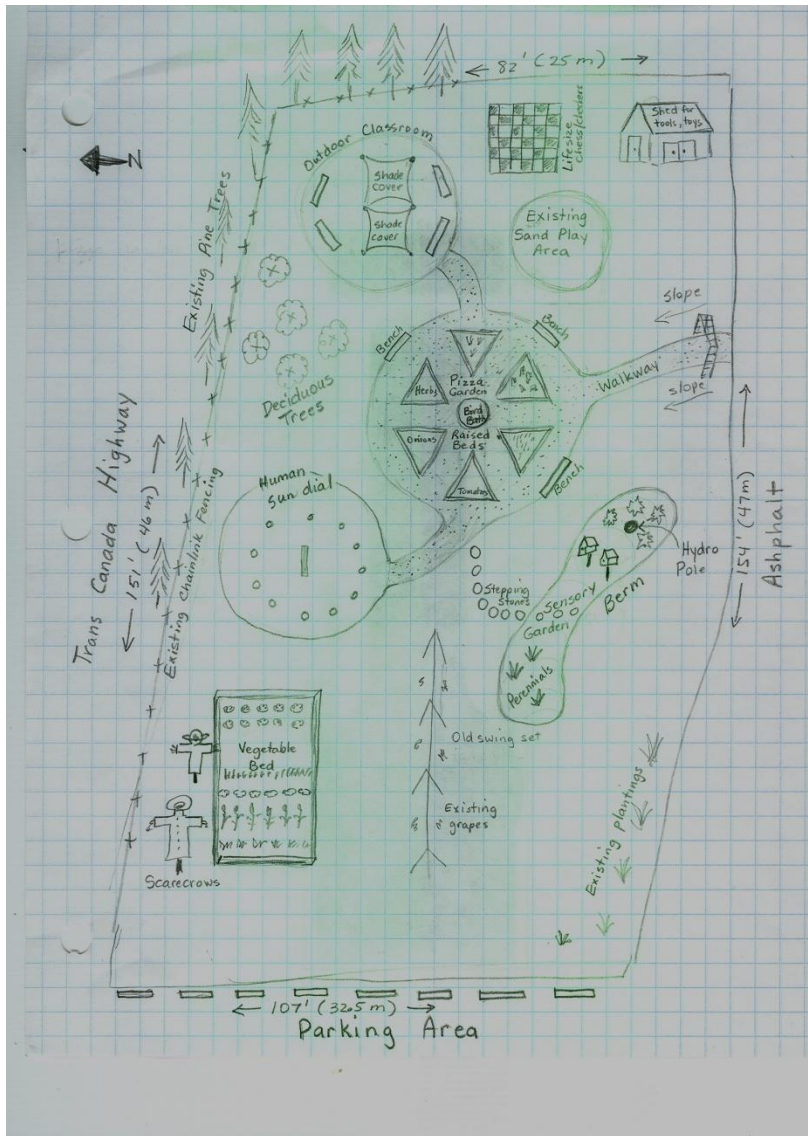
Deciding where to start is probably the most difficult thing. I would recommend starting small (although that is not what I did). I went to a short seminar during a garden show which explained how to draw up a garden plan. So, being the person that I am, I went home and drew up a monstrous plan for the north side of the school yard. It included all sorts of things that I personally thought we would never accomplish (I haven’t admitted that until now).

The school yard prior to beginning the garden (picture taken May, 2008)

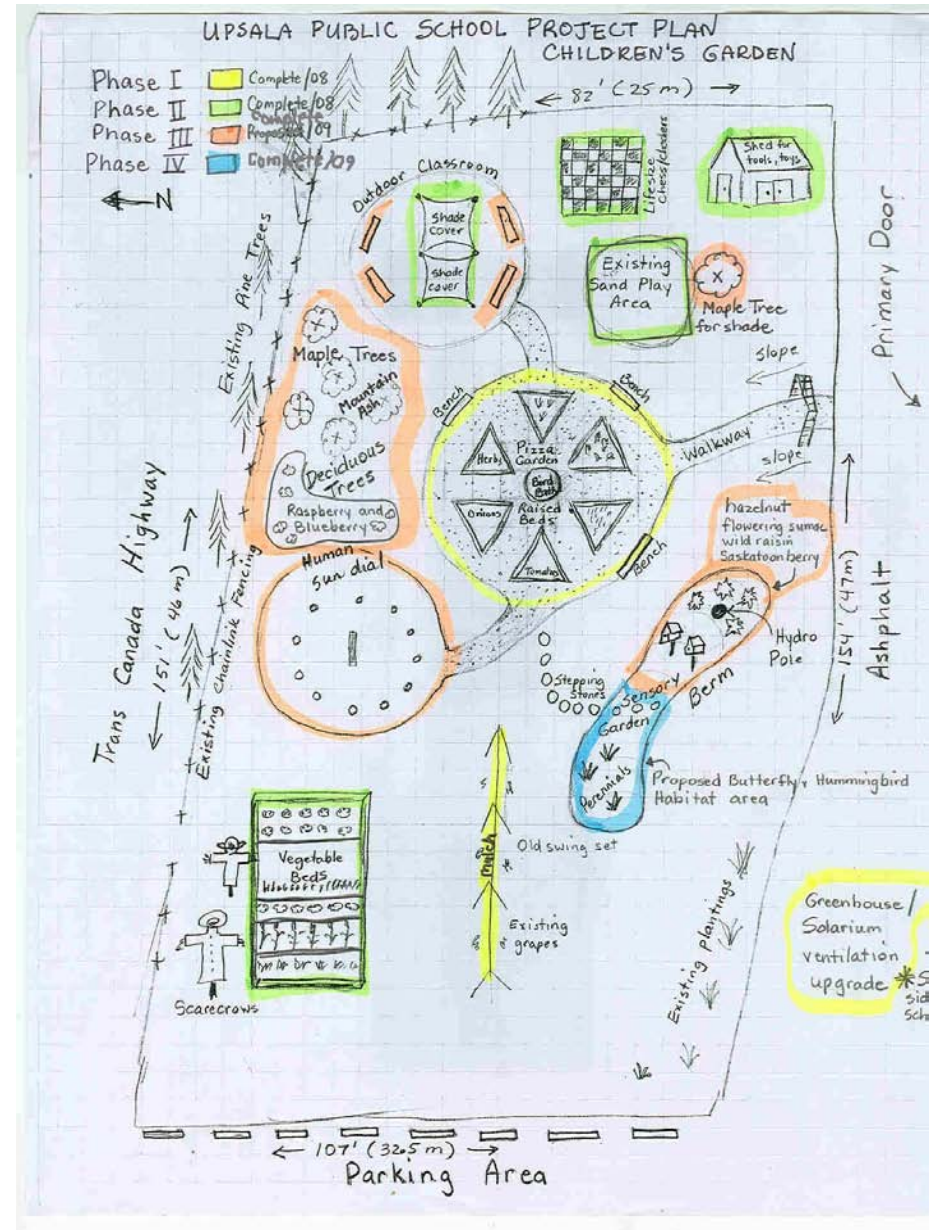


This picture is taken from the north side of the school building, facing north. The Trans-Canada Highway is shown on the other side of the pine trees.

This was the very first plan I drew up while sitting at my kitchen table. Pretty ambitious, but most of it came to fruition!



As we continued through the process over two years, not a lot changed on the plan, except that the pieces were broken down into Phases. We started Phase I in May, 2008, and completed Phase IV in the summer of 2009.



Overview of Our Phases (for more about funding – See Chapter 9)

Phase I – Spring/Summer 2008 (Coloured Yellow on Plan)

Funding from CODE (Council of Directors of Education)

Our school has a greenhouse/solarium attached to the south side. It measures about 8 x 24 feet and had a counter for planting trays. The problem with it was that it became much too hot for the plants to survive. The goal was to provide adequate ventilation so that we could start and grow plants in it. We also wanted to begin the Pizza Garden in this Phase. The cost of cedar is high so we had calculated that we could only make 2 of the 6 triangular beds in this Phase.

Phase II – Spring/Summer 2008 (Coloured Green on Plan)

Funding from Lakehead University Food Security Network

I was reading the Chronicle-Journal one morning and saw an article about Lakehead University Food Security Network providing funding for a community garden in Thunder Bay. The mandate of the Food Security Network is to facilitate the production of locally-grown food. Thinking there might be some funds available for our school, I found out the name of the person in charge (Connie Nelson) and submitted a proposal to her. This resulted in receiving funding which allowed us to complete the Pizza Garden and the raised beds for vegetables. We were also able to purchase hose, tools, bedding plants, seeds, soil, and manure.

Phase III – Spring/Summer 2009 (Coloured Pink on Plan)

Funding from Toyota Evergreen Learning Grounds

As we had the structures in place, the next step was to purchase fruit-bearing shrubs and trees. The application process is onerous but, once completed, it is very helpful when actually purchasing the plants. We were able to purchase Red Maple, Silver Maple, and Mountain Ash trees, as well as Saskatoon, Hazelnut, Flowering Sumac, Raspberry, Blueberry, Chokeberry, and Cranberry bushes. Our goals with this application were to embed the garden into numerous areas of the Ontario Curriculum, to provide shade and seating for an outdoor classroom, and to show appreciation of local Aboriginal perspectives, values and culture through native plants for food, dyes, crafts, aroma, etc.

Phase IV – Spring/Summer 2009 (Coloured Blue on Plan)

Funding from Canadian Wildlife Federation

As a member of the Canadian Wildlife Federation, I noticed an opportunity for funding from its WILD School Project newsletter. As we had noticed some difficulty in growing pumpkins, we thought that we needed to create a habitat for pollinators

(butterflies and hummingbirds). The Junior Class at the school (Grade 3,4,5) researched perennial plants that supported butterfly larvae (e.g. Milkweed) and provided food for butterflies (e.g., Coneflower, Joe Pye Weed) and hummingbirds (e.g., Bleeding Heart). These perennials were purchased and planted with some of the fruit-bearing shrubs. It is called the —Infinity Garden.”

Phase V – Spring/Summer/Fall 2010 (New Initiative – Not Shown on Coloured Plan)

Funding from Green Apple School Program: A Metro Initiative

This funding has just recently been received. As we have successfully created our garden, we feel that our next steps are to purchase —season extenders”, additional tools, and materials for preserving our ever-increasing produce. The purchase of pumpkin tents and tomato enclosures will extend our short growing season. We require jars and tools for food preservation and canning.

Phase VI – Spring 2010 (New Initiative – Not Shown on Coloured Plan)

Funding from: Green Street – Youth Leadership Challenge – Canadian Teachers’ Federation

This funding is for a project we call —Families Learn Gardening Together” and is a natural extension of our existing garden project. We hope to be able to learn how to test our own soil, how to prune our existing plants and trees, how to improve the growth of seedlings in our greenhouse, and how to grow giant pumpkins. This would be accomplished by obtaining advice and instruction from local gardeners and from master gardeners from Thunder Bay. Again, the Junior Class (Grades 3, 4, 5) developed the project application during their computer classroom time.

Another picture of school yard before starting project – May 2008



This is the same part of the school yard as depicted in the picture on Pg. 1 – facing east. The Trans-Canada highway is on the left behind the pine trees.

CHAPTER TWO – Making Garden Beds

Raised Beds - Why use raised beds?

I wanted to start with raised garden beds for several reasons:

- poor soil – we have very heavy, clay soil with sod that had been packed by many little feet for several years – by using raised beds we could put in a mix of loam, manure, and peat moss
- the garden is more contained and less likely to be trod on
- weeds are easier to pull out
- soil warms up quicker in the spring
- the sides of the raised bed can act as seating for small children

Disadvantages of raised beds:

- they tend to dry out quicker
- they are harder to get a rototiller in (if you have one), but you usually have less weeds anyway

I purchased cedar 2" x 6" boards in 16' lengths to create the raised beds for the vegetables. You can purchase them at many lumber stores, but I'd recommend Chimo Building Centre in Thunder Bay because they helped out with the delivery charge all the way to Upsala.



GREEN IDEA

Cedar is expensive, but we felt it would be rot-resistant in the long run (and you cannot use treated lumber in a school yard due to the possibility of the preservative leaching into the soil).

You can make the beds whatever size you choose (ours were 4' x 16'). I wouldn't go any wider than four (4) feet because it would be too hard to reach in from the sides. We placed our beds three (3) feet apart so we could kneel between the beds. We originally thought we would put two 2" x 6" boards on top of each other (so it would be 12" high), but decided to just put it one board high.

You will need stakes to put in to hold the boards in place. I used 2" x 4" pieces cut about 18" long. They were hammered in flush at the top and then screwed to the boards (see photograph on top of Pg. 5).

We used a rototiller to loosen the ground in the entire area where we were putting the raised vegetable beds. We then laid down the beds, staked them in, and filled them with soil (a combination of loam, bagged manure, and peat moss).



Can you believe the community support shown in this picture! Amazing people in Upsala! This picture was taken at an after-school —Garden Work Bee." Everyone worked together for the benefit of the students!



CURRICULUM CONNECTIONS

Mathematics – Big ideas – linear measurement, area; perimeter; volume (of soil in beds); ratio (of soil to peat moss and manure)

One of the parents brought down this cute little rototiller. It worked perfectly in the raised beds. We have since bought one at the school.



One thing that might be worth investigating is —~~Sq~~are Foot Gardening,” or as we have to call it —30 cm. by 30 cm. Gardening.” We started to look into it last year — check the public library for the book - apparently you can grow more plants in each square foot (oops — 900 sq. cms.) You could make a 4’ x 4’ bed and have 16 squares. Each square can contain a number of plants — 16 carrots, 3 peas, 1 tomato. Author: Mel Bartholemew. Check it out.

This is how the beds looked after a few weeks of growth.



Cost to build raised beds like we did

Cedar Lumber - 2” x 6” x 16’ - \$32.00 (Purchase 5 to get two beds — 4’ x 16’)	\$160.00
Loam (we were lucky the first year to have it donated)	
Loam to buy — about \$40 — \$50.00 for half ton load (you just need a parent with a truck to help out)	\$ 50.00
Bagged manure (5 in each bed — 10 @ 2.10	\$ 21.00
Peat Moss (2 large bags in each bed — 4 @6.00	\$ 24.00
Screws, 2’ x 4” for stakes, tax	<u>\$ 50.00</u>
TOTAL (Estimated)	\$305.00

So, for about \$300.00, you would have two raised beds like ours, ready for planning. You may think that this is too big to begin. If so, a 4’ x 4’ plot might be the best to start, as you would only need to buy 16 feet of cedar for each 4’ x 4’ bed — the cost would be much less than \$300.00. (See Chapter Five - Planting and Transplanting for what to plant in a 4’ x 4’ plot). (Also, see Chapter Thirteen - Other ideas and plans — for a wildlife deterrent which would fit a 4’ x 4’ plot).



GREEN IDEA

Before you buy anything, send home a note asking for donations or for actual items — I found out after buying the lumber that there was a parent who had some cedar lumber he would donate. Ask first!! (See examples of notes home in the next chapter on volunteers)

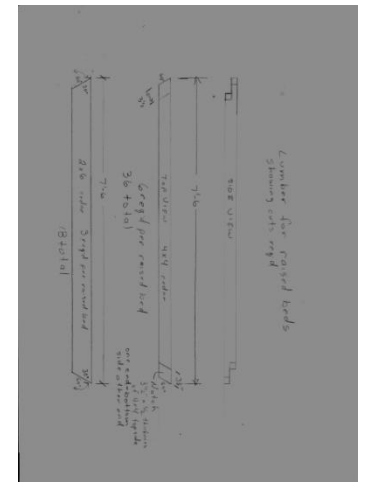
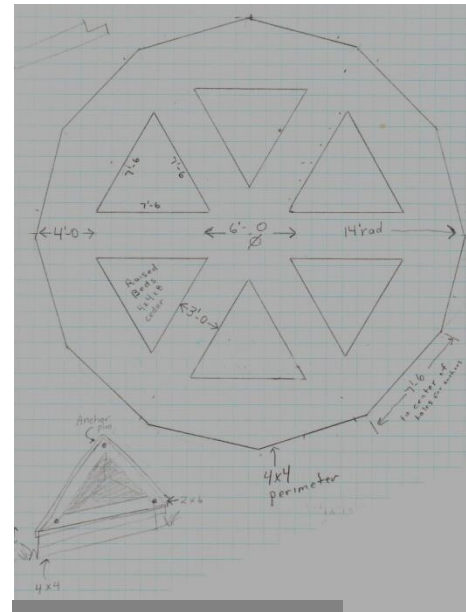


Picking peas the last week of August, 2008 (our first week of school).

Making Triangular Raised Beds for the —Pzza Garden”

Making different shaped beds is definitely trickier! Luckily, I have an amazing husband that will help me whenever I ask (and as a teacher, I ask a lot!) I had the idea for a pizza-shaped garden because I wanted to grow the ingredients for making pizza. My nephew owns Brule Creek Farms (local flour mill) and donated some wheat seed. I thought that having the kids learn about how to grow wheat to make flour for pizza dough would make it real for them. The —Pzza Garden” also contains tomatoes, peppers, onions, garlic, oregano, and basil (one student asked where the pepperoni grew).

We had parent volunteers make the pizza garden components (they did an amazing job!) They were then assembled, landscape fabric laid, mulch put on the fabric, and the beds filled with soil.





Growing wheat, tomatoes, and onions in the Pizza Garden.

Cost to build —"Pizza Garden" like we did

Cedar Lumber – 4" x 4" x 8' @ \$19.20 each (Purchase 36 to get six beds for pizza plus 12 for perimeter – 48 total)	\$ 920.00
Cedar Lumber – 2" x 6" x 8' @ 14.00 each (Purchase 18 for top of each of the six beds for pizza)	\$ 250.00
Loam (we were lucky the first year to have it donated)	
Loam to buy – about \$40 – \$50.00 for half ton load (you just need a parent with a truck to help out)	\$ 100.00
Bagged manure (3 in each bed – 18 @ 2.10)	\$ 38.00
Peat Moss (1/2 large bags in each bed – 3@6.00)	\$ 18.00
Anchor bolts, washers and nuts	\$ 33.00
TOTAL (Estimated) (Plus tax and delivery)	\$1,360.00

You can see that this is much more expensive than simple rectangular beds. You would need someone fairly adept at woodworking to cut the pieces and assemble them. You also need landscape fabric laid down between the beds and mulch put on top. You need to get heavy-duty landscape fabric that will last. The mulch, landscape fabric, and anchor pins (hammered in every foot to hold fabric) will cost close to \$500.00. Remember that you get what you pay for—we wanted rot-resistant wood and landscape fabric that wouldn't rip up.



CURRICULUM CONNECTIONS

Health and Physical Education – Big ideas – healthy eating; food groups; combination foods (pizza); gardening as daily physical activity



CURRICULUM CONNECTIONS

Mathematics – Big ideas – Data Management: record growth; record water, temperature, hours/days of sunlight.



GREEN IDEA

Coloured mulch looks nice the first year or two, but it begins to lose its colour after that. I found out after purchasing it that I could get wood chips for free from a local forestry company. Ask first!! (See example of notes home in the next chapter on volunteers).

Making a Garden Bed Over Existing Sod

A few years ago, I read about making garden beds over existing sod by laying several layers of newspaper down on the sod and covering it with soil. I can't remember where I read it, but it is one of those things that stuck in my mind. Did you know that grass will grow through asphalt, but not through newspaper? If you get any asphalt laid at your home, make sure the contractor removes every bit of grass and root, because it will grow right through it! (I wouldn't have believed this either, but it happened in our yard!) Anyway, I have made beds like this several times at my home, usually making it in the fall before I'm going to plant in it. It always seemed to work fairly well, so I thought we'd try it at school when we built our hummingbird/butterfly garden.

Steps:

1. Lay out the shape of the garden you would like using a rope, extension cord, or a garden hose (we used skipping ropes). Esthetically, it is better to have curves (we made ours kidney-shaped – turned out it was infinity-shaped).
2. Cut out the sod along the rope. You don't have to remove all the sod from the middle of the bed, but you do have to remove it from the edge at least 30 - 50 cms or so in.
3. Lay newspapers thickly over the sod in the area (10 - 12 layers thick).
4. Haul soil to a depth of at least 30 to 40 cm. thick in the middle, sloping down to the edge you made along the rope line.
5. Plant your plants. The newspapers will decompose.



CURRICULUM CONNECTIONS

Health and Physical Education – Big ideas – daily physical exercise; active participation

We called our bed the “Infinity Garden” because of its shape and because it is where we planted our perennials and shrubs. The hope is that they will come back each year forever! See the Canadian Wildlife Federation Proposal in Chapter Nine for a list of the plants we planted here. We planned this to be our habitat for hummingbirds and butterflies.



We laid garden stones as a pathway through the bed in the shape of the infinity sign. (More math in the garden!). It is also the symbol on the flag of the Métis Nation.



CURRICULUM CONNECTIONS

Mathematics – Big ideas – Number Sense and Numeration: quantity, counting, estimating.



GREEN IDEA

Before starting this project, ask families to send in newspapers. You will need a lot of them. We used two huge Rubbermaid containers full to create our garden and still needed more.

I have seen a version of this called “lasagna gardening.” That method involves layering compost, soil, garden waste (leaves, etc.) over the newspapers. You can check it out on line by searching for “lasagna gardening.” The good thing about these ideas is that you don’t have to remove the existing sod.



CHAPTER THREE – Recruiting Volunteers

Encouraging volunteers to get involved is extremely important. Parents, grandparents, school staff, and community members are often willing to participate in school activities for the benefit of children.

The original set-up of the garden is a lot of work and needs an organized leader and a lot of volunteers. Holding a **-Garden Work Bee** (a spin-off of an old-fashioned work bee) is a good way of getting a lot of work done in a short time.

Things to do when arranging a **-Garden Work Bee**:

The weeks before the Garden Bee

1. Make a list of what jobs need to be done (e.g., Unloading material from a truck; making a raised bed; filling with soil; rototilling, etc.)
2. Pick a date (and a rain date). Remember that you will need to get the garden ready for planting by about the end of May or the beginning of June.
3. If possible, arrange for day care for younger students or siblings. (We have a program at our school for after-school activities and the coordinator supplied the day care.)
4. Purchase materials required (mulch, bagged manure, tools, lumber, wood screws, peat moss, bedding plants, seeds, trees, perennials, etc.)
5. Arrange for the delivery or pickup of materials needed or pick it up yourself. I used my husband's truck (and my husband) to pick things up and deliver them to Upsala.
6. Make sure you have the tools that will be needed (e.g., drill, skillsaw, level, shovels, etc.)
7. Arrange for food for volunteers. We had hot dogs, juice, coffee, and freezies. We have a barbeque at our school, but if you don't, you may need one to cook the hot dogs.
8. Send a note home asking for help. The first notice sent home introduced the garden and asked for donations of ANY kind.

INTRODUCING:

Upsala Public School Children's Garden

Volunteers and donations gratefully accepted - manure, mulch, pails, shovels, seed potatoes, pick-up of materials from town, labour. If you are interested, and able to help in any way, please sign our Volunteer or Donation sheet (see the display in the hallway) or call Shirley Niemi at the school. Thank you!

The above little notice resulted in the donation of a garden wagon, garden hand tools, a truck load of soil, and a load of wood chips! Also, quite a few parents and several intermediate students signed up to work at the Garden Bee.

Upsala Public School Children's Garden

Thank you to all adults and senior students who have volunteered to help! We will be having a "Garden Bee" on **Thursday, May 29, 2008, at 3:15.** We need people to:

- weed existing beds
- help to assemble new raised beds
- fill new beds with soil and manure
- lay landscape fabric
- shovel mulch on pathways
- begin planting (if we get that far)
- cook hot dogs



Please bring gloves, a shovel and/or a rake or any other gardening tool you use. Wheelbarrows and pails would also be helpful to move soil. We also need some hammers for the anchor pins to hold the landscape fabric. "Many hands make for light work."

Free hot dogs and juice will be provided.

Please call the school secretary to let her know if you can help. This will give us some idea of how many people will be attending, and also whether your child will be sent home on the bus or stay at school. Free daycare is available for Primary and Junior children of parent helpers.

Shirley Niemi

On the day of the Garden Bee

1. Be organized! Make sure you have everything the volunteers need to do their jobs. Set out everything your volunteers will need. Use clipboards to make —Job Boards.” These will make your life much easier because they will set out exactly what needs to be done. Seems obvious, but it sure saves you having to tell everyone verbally what to do. Volunteers simply take a clipboard, sign on a leader, and then complete the task. If time, they can then take another board and complete another job.
2. Recruit someone to look after preparing and cooking the food at the predetermined time.

Examples of Job Boards and Jobs:

Job: Shovel Mulch from my truck onto plastic
Leader: Kim
 - Cut open plastic bags
 - put mulch on plastic
 - sweep out truck
 (If we get far enough to put it on paths, we'll do that)
tools: shovels, broom



Job: Cut Landscape Fabric
Leader: Aida
 See diagrams attached
 3 pieces out of 6' wide fabric
 4' to go around
 Strips for vegetable garden (we'll use what's left for that)
 We have: 50' of 6' fabric
 100' of 4' fabric
Measure twice, cut once!
tools: scissors, anchor pins, rubber mallet



Job: Build Raised Beds in vegetable garden
Leader: Tami, Jenna, Sharon
 Parking Lot
 16' x 4'
 16' x 4'
 need: drill (extra battery in Board Room) screws, skillsaw



I loved to see the jobs checked off!

Make sure you send home a note thanking your volunteers! When volunteers feel appreciated, they are more likely to volunteer again!

Arranging for Summer Maintenance

I was a bit worried about what would happen to the garden over the summer. I sent home the following volunteer sign-up sheet to each family. The response was very good. Every week except one was filled in!

GARDEN NEWS

June 11, 2008

The garden has been planted! The students have planted potatoes, peas, corn, beans, tomatoes, cucumbers, pumpkins, radishes, onions, garlic, peppers, wheat, and herbs (oregano, basil, dill, rosemary, thyme). They are eagerly checking each day for sprouts!

This is possible because of the **overwhelming** community response to the garden project! Many people have come to help at our Garden Work Bees. Many items have been donated (see the donation board at our Garden display at the school). This is all **much** appreciated.

It has been suggested that a family sign up for one week of summer maintenance tasks each. This is a great idea! Please think about when you might be available. I'll have the master sign-up sheet at the Graduation where you could sign your family name. Remember that if the Grade 8 students (soon to be Grade 9 students) help over the summer, they could earn community hours which they will need to graduate from high school. Please check with Mrs. Lysak or myself about this.

You would probably only have to visit the garden once or twice in your assigned week. I'll have a notebook in the tool container that can be updated each visit so we can have a record of what has been done, what should be done next, what has been picked, and anything else pertinent to the garden. I'll be at the school periodically, so leave notes in the notebook if you need anything,

Gardening maintenance tasks, as needed:

- take out weeds
- water plants
- tie or stake plants
- watch for frost warnings and cover plants (bedsheets work well for this)
- watch for pests (I'm worried about the hares around the school)
- pick vegetables as needed so they don't spoil (peas, tomatoes, radishes)
- preserve or freeze items that can be used by the students in the fall (some items don't freeze well [e.g. radishes, cucumbers] so pick them and eat them when they are ready). If you know how to make pickles, use the cucumbers and dill to do that with your child. We can share them in the fall.

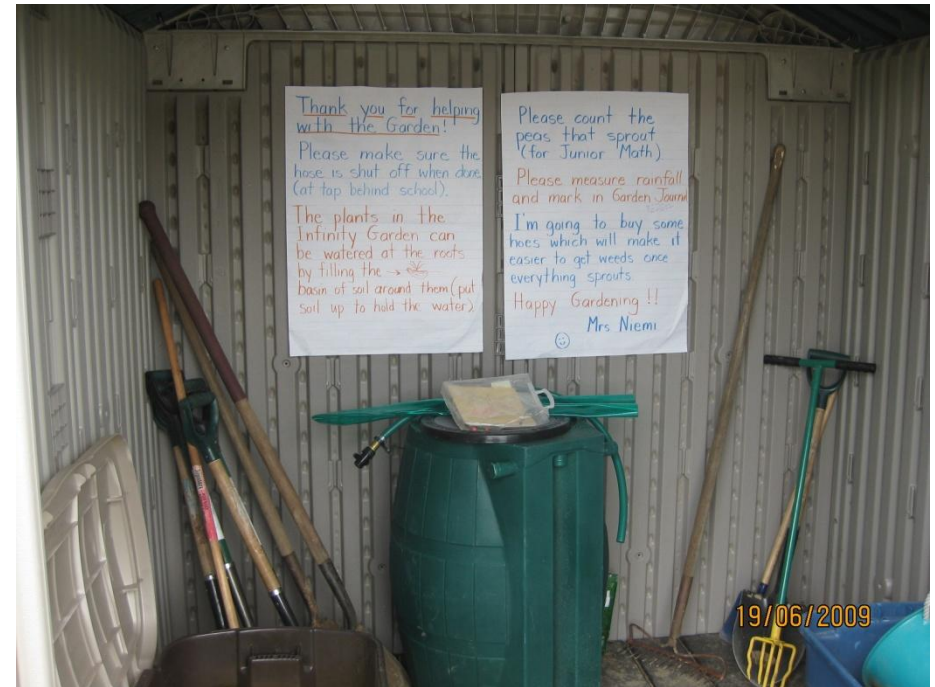
Once again, thank you for supporting your child's learning through this project.

Shirley Niemi

8 Weeks of Summer	Family Name
June 22-28	
June 29 – July 5	
July 6 to 12	
July 13 to 19	WE HAD EVERY WEEK EXCEPT ONE
July 20 to 26	FILLED IN!! AWESOME COMMUNITY
July 27 – Aug 2	AND FAMILY SUPPORT IN UPSALA!!
Aug 3 – Aug 9	
Aug 10 – August 16	



Each family was given the combination to the garden shed so they could access the tools, watering cans, and Garden Journal. I asked families to fill in the Garden Journal so we knew what chores had been done and what needed doing next (e.g., thinning plants, hilling potatoes, etc.)

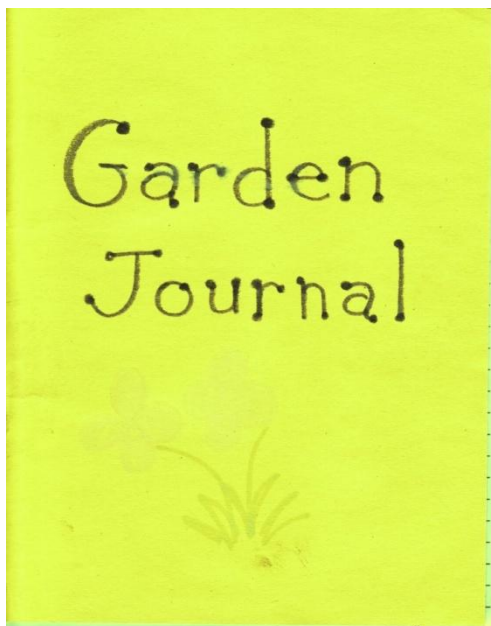


Next steps for summer maintenance:

1. Model effective watering techniques, including determining time and need for watering.
2. Model effective removal of weeds and hoeing techniques.
3. Encourage return of tools to shed.

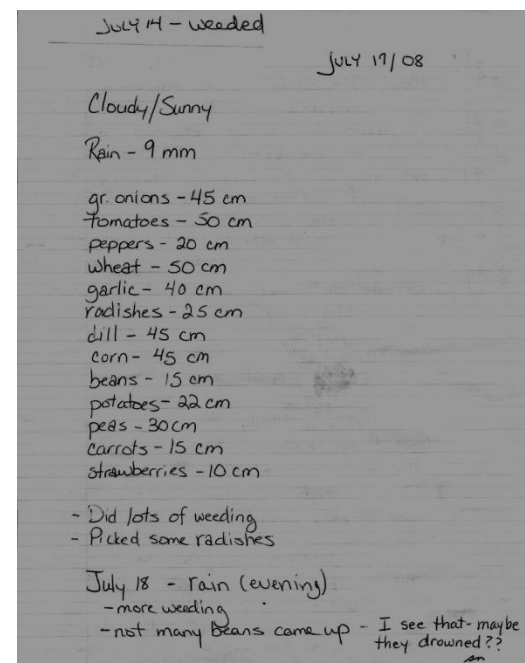


One of our youngest volunteers.

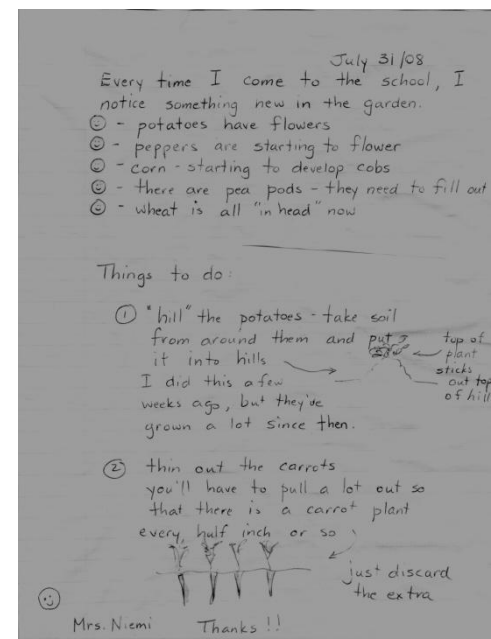


I put a cover on a regular student notebook and put it in a ziplock bag in with the garden tools. I asked families to record their observations and activities each time they came to the school. These are some examples of journal entries from the Garden Journal Book. It was great to drive by on a summer day and see families helping out by gardening together!

Also recorded this past growing season, were number of seeds that germinated for Math in the Garden calculations in September.



One of several families spending time in the garden.



CURRICULUM CONNECTIONS

Language Arts – Big ideas – Writing: generate, gather, and organize ideas and information to write for an intended purpose and audience; development of life-long journaling and record-keeping skills

CHAPTER FOUR – Tools – Minimum Needs

When starting your garden, there are some tools that you will need. Canadian Tire is a good place to buy tools – wait until they are on sale in the spring.



You will need a pointed shovel (a spade) to turn over soil, to dig soil, to make edges, etc. This is probably the most necessary tool to have.

You will need several sets of hand tools for students to use when weeding. I bought five or six sets. Be cautious about buying cheap ones – they don't stand up well – they bend or rust. Remember, you get what you pay for – but try to get them on sale.



Another good tool is a garden claw cultivator. It is handy to get in between plants to loosen weed roots. You can then simply pull them out by hand. The claws are available in hand-held sizes or with long handles. It is also good for breaking up the soil so that air

and water can reach the roots of your plants. It is also easy to use if you have any back problems. I have the long one pictured here. I love it! It is my —an't do without" tool!



Garden rakes are needed to level the soil in beds, remove debris and rocks, and for general clean-up around the raised beds. We purchased two garden rakes.



You probably won't need a leaf rake (pictured right). They have the fan-shaped tines and are usually used for raking leaves. However, if your school yard has a lot of leaves, you could make leaf mould – (see Chapter Seven on composting).



Kids love watering plants with a watering can. You should buy at least four of them. We are lucky to have an outside water tap at our school to fill the cans. Filling them from a rain barrel is also good because the water is warm which is less shocking for plants. We hope to have our rain barrel set up this coming season. We also have a hose on the tap. Make sure you don't buy a cheap hose! Buy a rubber one that won't kink.



A garden hoe is an essential tool. None of the students I asked even knew what a hoe was. Using a hoe to chop up weeds is a good way to also loosen the soil to allow oxygen and water to get to the roots of your vegetables. It is better than picking weeds by hand because you can either pull out or chop up the roots of the weeds. Just be careful not to chop off the roots of your plants!

Estimated Costs of Tools

To give you some idea of how much money you need, these are the amounts we paid for some of our tools:

Pointed shovel (spade)	\$ 7.50 (half price)
Hand tool set (shovel, rake, weeder)	\$ 11.99 (reg. 19.99)
Garden hoe	\$ 16.99
Garden rake	\$ 16.99
Plastic watering can	\$ 5.50
100' hose	\$ 39.99

Of course, taxes are extra.



CURRICULUM CONNECTIONS

Mathematics – Big ideas – estimation, money (calculation of taxes and totals), problem solving (we have \$, what can we afford to buy?)



GREEN IDEA

Ask families to donate tools they have at home and may not be using. We were lucky to get a garden wagon and some hand tools.

Optional Tools That Might be Nice to Have, But Aren't Necessary



Bulb Planters – we have a couple of these. They make it easier for little people to plant bulbs, both to make the hole and to ensure the correct planting depth.



Small rototiller – we purchased this to help with the larger potato/pumpkin bed and to work up the raised beds. Be careful when using a rototiller – they can actually work the soil too fine so that it packs like cement when it gets wet. It works well, however, when adding manure or peat moss or compost as it mixes everything together well.

Square shovel – I bought a couple of these because I use one at home for edging my garden beds. What I failed to think about was that at my house the soil is sandy and the square shovel works well. At our school, the soil is heavy clay (which packs like cement) so it is hard to get this shovel in the ground. It does make a nice straight edge between grass and bed (when not using raised beds).



You may also need a wheelbarrow. We were lucky that our school had one already. I also brought mine from home several times. A garden cart/wagon works well too. We were lucky to have one donated to our garden project. This is a picture of me bringing the tools to the willing workers at a Garden Work Bee!

CHAPTER FIVE – Planting and Transplanting

Planting Seeds

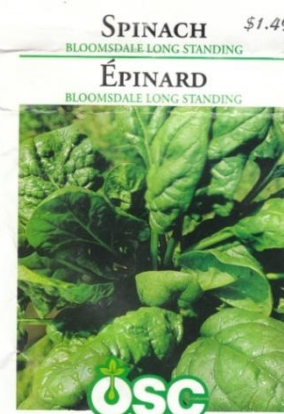
Once the soil has been worked (that means tilled by hand or with a rototiller, weeds and rocks removed, and leveled), it is ready for planting. It is actually very easy. All you have to do is to follow the directions on the seed packages. It usually lists the planting depth, seed spacing, and row width. Follow the instructions!



CURRICULUM CONNECTIONS

Mathematics – Big ideas – This is an excellent measurement activity. Have students estimate how many seeds will go in a row based on the seed spacing listed on the seed package and then measure and estimate days to germination and days to harvest using a calendar and then confirming the reasonableness of the estimate.

I usually make a little trench, the depth the seed package calls for, and plant the seeds one at a time into it. After I have planted the entire trench, I gently cover the seeds with soil and pat it down with my hand or the flat end of a garden rake. You want it packed firmly but not too hard.



Read the back of the packages for all sorts of information. —Day to Harvest” is a fun calculation with the younger students. —fwe plant these today (May 29th), when should we be able to eat the spinach?”



Spinach is a tricky crop to grow at school because it goes to seed quickly. Make sure you let your summer volunteers know that they should be cutting it off and eating it when it is young and tasty.

A string stretched out from one end of the bed to the other helps to keep the rows straight. Bigger seeds like peas or beans are easier for young students. Carrot seeds are tricky because they are very small and light. I bought seed tape this year for the carrots. I'm thinking they'll be easier to thin out later.



Determining when to plant is something that you can never be entirely sure of. The experienced gardeners all have a different formula: after the last full moon in June; the first weekend after Victoria Day; June 1st. Remember that it takes a week to 10 days for the seeds to germinate, so you should calculate back from when the last frost will likely be (e.g., If you plant on June 1st, the plants won't emerge until June 7th or 10th, so the danger of frost killing them is lessened).

The main thing is not to stress about it. If you plant too early, they sprout, and the frost kills them – so what? This is a great learning experience. All you've lost is a couple dollars worth of seeds. However, if you are buying or starting your own bedding plants and they freeze, that is a more costly mistake. In that case, watch the weather to see if there is a risk of frost and, if so, cover the plants with frost blankets (I use bed sheets – they work well and can be washed and used again and again).



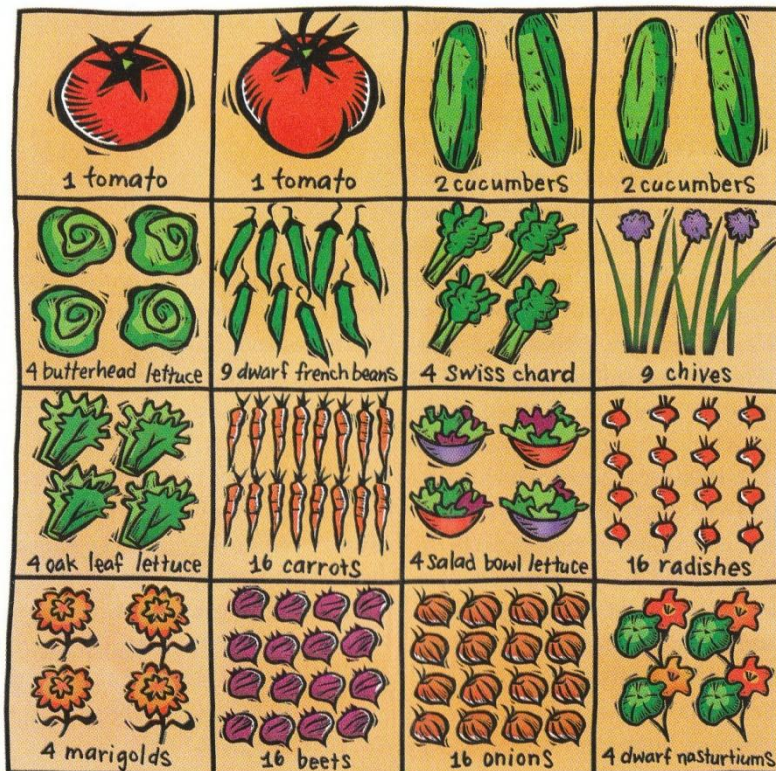
Planting potatoes – we received a donation of seed potatoes from Breukelman's Potato Farm. This is a fun activity for the students. Have them measure spacing distances and planting depth.

What to Plant

This idea comes from Mel Bartholomew's *Square Foot Gardening* (in Ontario, we would have to say it is 30 cm. x 30 cm. = 900 sq. cm. gardening) It would be a reasonably sized plot to begin with and would only need 16' of cedar lumber and less soil, etc. (see Chapter Two – Making Raised Beds).

A few tips:

- Place your garden so it receives at least six hours of full sun a day.
- Build the garden in a raised bed (See Chapter Two).
- Measure and mark each block with string.
- Sow only one crop per block and, depending on the plant's mature size, place 1, 4, 9, or 16 equally spaced plants per block.
- Note that in this example, you would need to buy two tomato plants (bedding plants) as they would take too long to grow from seed. Also, note that chives are a perennial plant (comes back each year).



Choosing the Seeds to Plant

I would suggest that the basic (and easiest) things to plant would be:

- Onions – buy “onion sets” instead of seeds. These are onions that are already have one year of growth. Plant them the pointy side up (although last year we planted them the wrong way and they turned themselves and grew up toward the sun anyway – a neat learning experience!). They can be picked and used as green onions or left until the top dies off and turns brown. They can then be stored and used later into the fall/winter.
- Radishes – they come up very fast so you can pick and eat something before school is out in June. The seed package says they are ready to harvest in 21 days.
- Potatoes – these are good because they don't have to be harvested until you are back in school in the fall. This makes for some real excitement (see Chapter Eleven to arrange your own Potato Math Day). They do need to be “hilled” though. This keeps the potatoes covered with soil. If they are too close to the surface, the potatoes will turn green—this is toxic and should not be eaten. (We used green potatoes for potato stamping in art). You can use sprouted potatoes and cut them to plant – just make sure each piece has one or two eyes (the spots where sprouts start).
- Marigolds – plant these flowers among the vegetables. Bugs don't like them so they are good to plant here and there. They look pretty too (see front cover picture of this book).
- Beets, Turnips and Carrots – root crops are good to grow because they can stay in the ground until you are back in school in the fall. They do have to be thinned out so they grow properly. We are going to try carrot seed tape this year to see if that helps with the thinning. Apparently, if you plant some radish seeds along with the carrots, it will be a way to thin the carrots (because the radishes are ready and pulled a lot sooner than the carrots and this loosens the soil and makes room for the carrots).
- Sunflowers – all kids love sunflowers! We are going to try growing the sunflower house again this year (see Chapter Thirteen – Other ideas and plans).

Seeds are fairly cheap. I have kept seeds over from year to year and they still germinate, so don't throw the extras out. Don't be afraid to try anything! Even if they don't grow, or grow wonky, or aren't perfect – it will be a learning and growing experience!

—God” Soil – What is it?

If you talk to gardeners, you will often hear them talk about soil – whether they have “good” soil or not. I’ve always wondered whether my soil was —god,” and what exactly that meant.

We had Joel Symonds, Lab Manager/Analyst from FoReST (Forest Resources & Soils Testing Laboratory) do a presentation at our school about soil. Go to www.forestlab.ca if you would like to get a complete soil analysis.

We learned about pH and what it means if your soil is acidic (below 7) or too alkaline (above 7). I had not really worried about the pH of the soil before, but it is important for plant growth. The best place for soil to be is a pH of 6-7. There are testers you can buy that are fairly accurate (although Joel has a much more accurate one).

If your soil has a low pH, adding lime will raise it/make it more alkaline.

If your soil has a high pH, adding sulphur will lower it/make it more acidic.



CURRICULUM CONNECTIONS

Science and Technology – Big ideas - Soils in the Environment Topic (Grade 3) – The composition, characteristics, and condition of soil; Soil is essential for many living things; Interaction with soils can cause positive or negative changes.

You can do a porosity test by putting some soil in a container with holes in the bottom (we used margarine containers). Put sand in one, gravel in another, and your garden soil in the third. Cut off the bottom off a pop bottle and sit your margarine container full of dirt in it. Pour a measured amount of water into each one and see which holds water best. This was interesting for my students. Even the little ones got that too much water can drown the roots of a plant (the clay soil we have did not allow any water to drip through).

I think the easiest thing to do to start is to get some soil from any local dealer (look in the yellow pages), add some bagged, composted manure (which you can buy anywhere), and add compost from your vermiculture composter or outdoor composter once you have some. You can start to experiment and add fancy amendments to your soil later. Unless you are trying to start your garden on a gravel pile, whatever your soil is now should be okay to start.

growing SALVAGING YOUR SOIL

Conditioners help improve the earth's structure and boost its fertility.



GET THE DIRT

Garden success starts in the earth.
Learn how to get your soil in tip-top shape
BY STEPHEN WESTCOTT-GRATTON

IF YOU WANT great results above ground you have to pay attention to what's going on below ground. While we may talk a lot about fertilizing plants, it's actually well-fed soil that's the key to productive, sustainable gardens no matter where you live in Canada.

Soil—never call it dirt—is a combination of minerals (sand, silt and clay), organic matter, micro-organisms, water and air. The type of soil that most gardeners aim for is called loam, which has a mineral content of 40 percent sand, 40 percent silt and 20 percent clay.

In addition to the mineral content, really good garden soil should consist of at least 50% organic matter: that's the stuff that's responsible for most of your soil's water-holding capacity, much of its nutrient value, improving its tilth (thereby increasing water and air penetration), and providing food for the millions of beneficial micro-organisms, bacteria, fungi and insects that are all a part of healthy soil. So whether you garden on a sand dune or in a clay quarry, the advice will always remain the same: add organic matter!


Organic matter comes in many forms and in various stages of decay: I like to think of it as a soil conditioner—something that improves both soil structure and fertility. Most soil conditioners also contain plant nutrients.

Organic matter that's gone through some degree of decomposition is called humus. Active humus is made up of matter rich in nitrogen, such as kitchen vegetable waste, grass clippings and young (seedless) weeds; stable humus is composed of materials that are high in carbon, such as wood chips, woody



LOAM HAS MINERAL CONTENT OF

40%	+	40%	+	20%
SAND		SILT		CLAY



Choose plants that are already suited to your native soil.

THE LOWDOWN ON N-P-K

The three numbers that you see on bags of composted manure, boxes of blood and bone meal and water-soluble fertilizers refer to three major plant nutrients associated with healthy growth; the number value (e.g., 20-20-20) is the percentage of each nutrient that is immediately available to plants for uptake.

N Nitrogen is necessary for strong, vigorous growth, leaf production and is used in the process of photosynthesis

P Phosphorus promotes flowering, stimulates root growth and is used in the process of ripening fruits and seeds

K Potassium works with nitrogen to aid in the photosynthetic process, and is necessary for normal fruit formation and in the uptake of other nutrients

The numbers for N-P-K are usually higher for chemical fertilizers than they are for soil conditioners (an analysis of 2-1-1 is typical) since the nutrients in organic compounds—such as compost or rotted manure—are released into the soil profile more slowly and over a longer period of time. Nevertheless, producers can legally only claim the immediate nutrient availability on product labels.

waste from garden pruning and conifer needles. When they're blended together in roughly equal proportions, we call the resulting mixture "compost."

Other common soil additives include gypsum (calcium sulphate) that helps to loosen heavy clay soils, and lime and sulphur, which some gardeners use in an attempt to change their soil's natural pH. Soil pH is usually determined by the kind of parent rock that your soil

is derived from: in areas where the parent rock is limestone, the pH will tend to be neutral to alkaline (7.0 to 8.0), whereas granite is apt to produce acidic soils (5.0 to 7.0). I don't recommend attempting to change your soil's pH; it's much easier to choose plants that are suited to the type of soil you already have. Working with Mother Nature, rather than against her, always produces the happiest results.

The above information about plant nutrients says it much better than I could ever attempt to. Here is a little rhyme (from Joel Symonds) to remember what plant growth the three major plant nutrients promote: Up (Nitrogen), Down (Phosphorus), All Around (Potassium).

Transplanting Bedding Plants into the Garden

There are quite a few plants that you might want to start ahead or buy bedding plants already started. A "bedding plant" is a plant that has been growing for awhile before you plant it out in the garden. You can buy them from nurseries or most stores.



The first year of our garden (2008), we purchased some corn, pumpkins, herbs, and marigold bedding plants from a nursery.

In 2009, we started our own plants in the greenhouse/ solarium attached to the school (see information on this in Chapter Six).

When transplanting, dig a hole about twice as big as the root ball. Push the bottom of the container, holding the plant. Gently loosen the very bottom part of the roots. You do this because sometimes the plant doesn't realize its roots are no longer in a ball, and continue to grow round and round.

Put some water in the hole (about a half cup full or 125 ml), and place the root ball directly in the water. Backfill the hole with soil. Make sure that the plant is planted to the same depth as it was in the planting tray (no deeper or shallower).



Planting purchased pumpkin plants (2008).

In 2009, we started our own in the greenhouse. They didn't do very well once planted outside. This year (2010) we are having an expert local giant pumpkin grower come in and present a workshop to us sharing some of his pumpkin tricks (these giant pumpkin growers are very competitive; he said he can't share *every* secret with us!).

Hardening Off

Be careful about planting out bedding plants. You need to make sure they are strong enough to withstand the temperature, the sun, and the wind. Usually, when you buy plants from a greenhouse, they have been exposed to these conditions. Sometimes, if they have always been in a greenhouse, they have not. The process of slowly getting bedding plants used to being outside is called "hardening off." You do this by putting them out in their trays for increasingly longer periods of time, starting with a couple hours in the shade; then a couple hours in the sun, and then a few hours in a sunny, windy spot, until eventually they are outside the whole day.



CURRICULUM CONNECTIONS

Science and Technology – Big ideas - Needs and Characteristics of Living Things; Growth and Changes in Plants; Biodiversity.

CHAPTER SIX – Growing Greenhouse Plants

Starting seedlings in the classroom is fun. The students love waiting for the seeds to sprout. However, once they sprout, it is often difficult to keep them from getting too lanky. They need a lot of light. Once they start having to reach for light, they become weak and never really regain stem strength. For years I have started seeds at home under florescent lights. My husband rigged up a system where the lights hung on chains so they were adjustable. I would keep the lights close to the plants right from the time they sprouted so they would not become weak and lanky.

We have a gem of a greenhouse/solarium attached to our school in Upsala! This works better than florescent lights, because the greenhouse provides warmth as well. The problem was that it became too hot on sunny days and the existing fan didn't have enough oomph to take the hot air out. Phase I of our garden project was to get the greenhouse operational. I found a barn fan retailer, Thunder Bay Co-Op, who supplied a fan and exhaust damper. When this was installed, it worked like a charm (at about one-quarter of the cost of a greenhouse fan). We have two thermostats – one to start the heater when it gets too cold (around 20 degrees C.) and one to start the fan and open the damper when it gets too hot (around 26 degrees C.) Boy is it sweet!



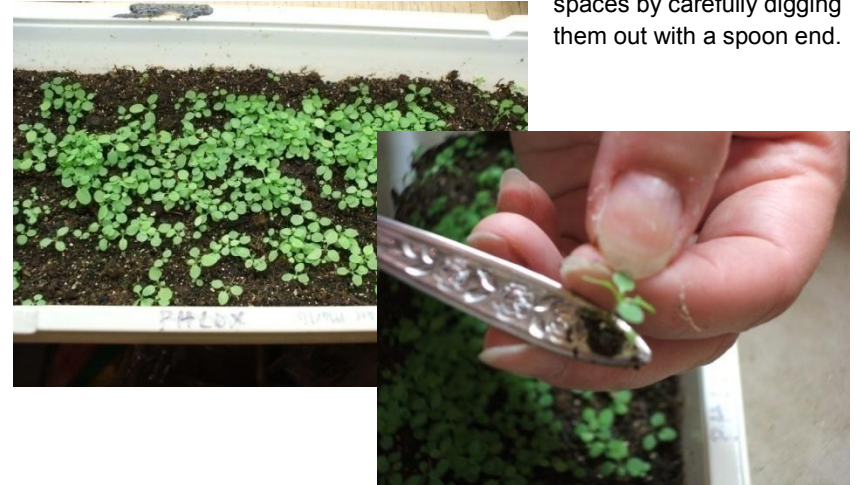
GREEN IDEA

Use compost tea (see Chapter Seven) instead of fertilizer once the plants have developed one or two sets of true leaves.



This is my seed starting stand which I have in the basement at my home. I started mostly flowers – annuals and perennials. I liked starting Wave Petunias (I collected the seeds in the fall). They are \$2.99 each to buy. I'd grow hundreds of them!

Starting a lot of seeds in a flat helps save space. I taught the students how to transplant them into the planting trays. They transplanted one plant in each of the spaces by carefully digging them out with a spoon end.



We had a good crop of plants growing in our greenhouse. The tall ones on the left are corn plants. We found out that we started them too early. We started them on

Earth Day (April 22) and found out we should have planted them about May 10th. They became too big too fast and by the time we were able to plant them out, they were too big and couldn't stand up to the wind (see —~~Hardening~~ Off" in the previous chapter). Gardening develops persistence - we'll try again!



CURRICULUM CONNECTIONS

Science and Technology – Big ideas – Interactions in the Environment; Ecosystems; biotic/abiotic elements.

Soil for Germinating Seeds

You should buy germination mix for starting seeds. Regular potting soil is too heavy for the tiny roots to penetrate. Germination mix is specially made of lighter materials, including vermiculite and peat moss. Seeds will germinate more quickly in it; however, it does not contain enough nutrients to keep the seedlings in for the long term. Transplant them after they have grown their first or second set of true leaves.



These are —Early Girl! Tomatoes at about 10 days. They germinated quickly and grew 3 cm. over the Easter weekend!

Watering and Caring for Greenhouse Plants

Plants in the greenhouse have to be watered nearly every day. When I looked into refurbishing the solarium/greenhouse attached to our school, I inquired at some garden centres about installing a watering system. They all advised against it, as it is not accurate enough to keep plants from either drying out or being over-watered. One idea that I want to try next is having plants absorb the water from below so that it gets to the roots where the water is needed.



Thanks to someone's blog out there, I found an example of watering from below. It said that the best medium is a capillary mat but they are hard to find and cost more. You can use any water absorbent material like thick felt. Use wool felt not craft felt."

I have some old grey wool blankets from my husband's grandmother that may work. If you'd like to know how it turned out, feel free to email me. My contact information is in the introductory information contained in this book.



CURRICULUM CONNECTIONS

Mathematics – Big ideas – estimating days to germination (based on range as listed on seed package); measuring and recording growth; determining reasons for non-starters or seedlings that die.



GREEN IDEA

Use juice boxes (cut off the top and drill a hole in the bottom) and yogurt containers (also needs a hole drilled in the bottom) for planting.



Getting ready to plant. We pre-moisten the germination mix in the blue tubs and then fill the containers (juice boxes, yogurt cups, or applesauce cups).

Seeds to Sow

These plants are recommended for starting indoors

Seed catalogues offer thousands of different kinds of seeds, but not all are good candidates for starting indoors. Some seedlings get too big too fast. Others are so slow that you lose hope before they do anything. Some seedlings resent being transplanted, and grow best if they're started directly in the garden. Unfortunately, the catalogues don't always tell you about this. Most seed catalogues give a lot more information about what a plant looks like when it's mature than about what it needs to get started.

The various kinds of vegetables, herbs, annuals, and perennials listed here

are all good choices for starting indoors. Their seeds germinate readily, and as seedlings, they grow well at normal room temperatures (60°F to 70°F days, with cooler nights), with fluorescent light for about 18 hours a day. They all grow slowly enough that it's worth sowing them indoors to gain a head start on the season, but fast enough that you'll see results. Some of the perennials will even flower the first season if you start them indoors.

The codes following the plant names indicate the conditions that are required for germination:

W (warm) means the seeds germinate best at a soil temperature around 70°F.

C (cool) means the seeds germinate best at a soil temperature around 55°F.

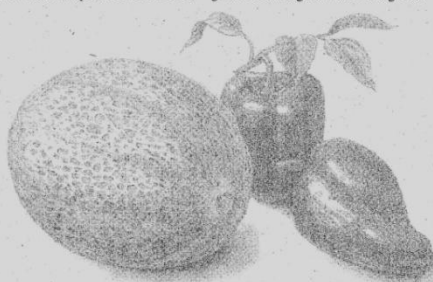
L (light) means the seeds need light to germinate. Do not cover them, and put the container under the lights.

D (dark) means the seeds need darkness to germinate. Cover them with a layer of soil twice as deep as the seeds are thick.

The numbers indicate the average number of days from sowing to germination. Most seedlings need another 3 to 10 weeks between germination and transplanting outdoors, depending on how fast they grow and how big you want them to get before setting them out in the garden.

VEGETABLES

Asparagus: W D 15-20 (Soak seeds overnight in warm water before sowing. Begin harvest in third year.); **Broccoli:** W D 5-10; **Brussels sprouts:** W D 5-10; **Cabbage:** W D 5-10; **Cabbage, Chinese:** W D 5-10; **Cantaloupe:** W D 10 (Sow directly in individual pots.); **Cauliflower:** W D 5-10; **Cucumber:** W D 10 (Sow directly in individual pots.); **Eggplant:** W D 10-15; **Leeks:** W D 10-15; **Lettuce:** W L 5; **Okra:** W D 10 (Sow directly in individual pots.); **Onions:** W D 10-15; **Peppers:** W D 15; **Tomatoes:** W D 5-10; **Watermelon:** W D 10 (Sow directly in individual pots.)



HERBS

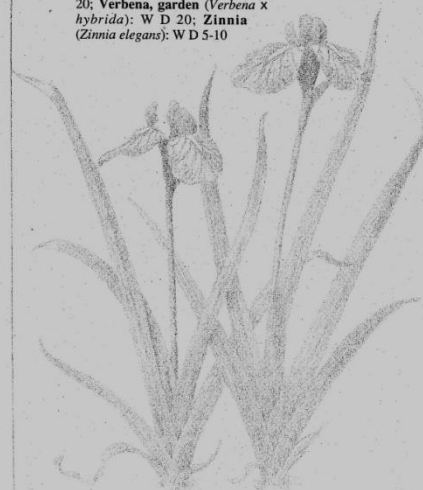
Anise hyssop (*Agastache foeniculum*): W D 10; **Basil** (*Ocimum basilicum*): W D 10; **Catnip** (*Nepeta cataria*): W D 10-15; **Chamomile, Roman** (*Chamaemelum nobile*): C L 10-15; **Chives** (*Allium schoenoprasum*): W D 10-15; **Chives, garlic** (*Allium tuberosum*): W D 10-15; **Dill** (*Anethum graveolens*): W L 15; **Fennel** (*Foeniculum vulgare*): W D 15; **Feverfew** (*Chrysanthemum parthenium*): W L 10-15; **Germander** (*Teucrium chamaedrys*): W D 15-20; **Hyssop** (*Hyssopus officinalis*): W D 10; **Lavender** (*Levandula angustifolia*): W D 15-30; **Lemon balm** (*Melissa officinalis*): W L 15; **Marjoram, sweet** (*Origanum majorana*): W D 10-15; **Oregano, Greek** (*Origanum heracleoticum*): W D 10-15; **Parsley** (*Petroselinum crispum*): W D 15 (Soak seeds overnight in hot water before sowing.); **Pennyroyal** (*Mentha pulegium*): W D 15; **Sage, garden** (*Salvia officinalis*): W D 15-20; **Salad burnet** (*Poterium sanguisorba*): W D 10-15; **Savory, winter** (*Satureja montana*): W L 15; **Sorrel, French** (*Rumex acetosa*): C D 10-15; **Tansy** (*Tanacetum vulgare*): W D 10-15; **Thyme, common** (*Thymus vulgaris*): C D 20; **Thyme, mother-of-thyme** (*Thymus pulegioides*): C D 20; **Watercress** (*Nasturtium officinale*): C L 10-15; **Wormwood** (*Artemisia absinthium*): W D 10



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ANNUALS AND BEDDING PLANTS

Alyssum (*Lobularia maritima*): W L 10-15; **African daisies** (*Arctotis* hybrids): W D 20-30; **Begonia, tuberous** (*Begonia tuberhybrida*): W L 15-20; **Begonia, wax** (*Begonia x semperflorens-cultorum*): W L 15-20; **Calendula** (*Calendula officinalis*): C D 10; **Carnation** (*Dianthus caryophyllus*): W D 5-10; **Calliopsis** (*Coreopsis tinctoria*): W D 5-10; **Celosia** (*Celosia argentea*): W L 10-15; **China aster** (*Callistephus chinensis*): W D 15; **China pink** (*Dianthus chinensis*): W D 5-10; **Coleus** (*Coleus blumei*): W L 10-15; **Cosmos** (*Cosmos bipinnatus*, *C. sulphureus*): W D 5-10; **Cup-and-saucer vine** (*Cobaea scandens*): W D 5-10; **Dahlia** (*Dahlia* hybrids): W D 5-10; **Dusty miller** (*Senecio cineraria*): C L 10; **Flossflower** (*Ageratum houstonianum*): W L 5-10; **Flowering kale** (*Brassica oleracea*): W D 10-15; **Flowering tobacco** (*Nicotiana glauca*): W L 20; **Garland chrysanthemum** (*Chrysanthemum coronarium*): W D 10-15; **Gazania** (*Gazania* hybrids): W D 10-15; **Geranium** (*Pelargonium x hortorum*): W D 20-25; **Gerbera daisy** (*Gerbera jamesonii*): W L 15-25; **Globe amaranth** (*Gomphrena globosa*): W D 15; **Gloriosa daisy** (*Rudbeckia hirta*): W D 10; **Gourds** (*Cucurbita pepo* and *Lagenaria siceraria*): W D 10-15; **Impatiens** (*Impatiens walleriana*): W L 15-20; **Lobelia** (*Lobelia erinus*): C L 20; **Love-lies-bleeding** (*Amaranthus caudatus*): W D 10-15; **Madagascar periwinkle** (*Catharanthus roseus*): W D 15-20; **Marigolds** (*Tagetes erecta*, *T. patula*): W D 5; **Morning glory** (*Ipomoea purpurea*): W D 5 (Soak seeds overnight in warm water before sowing.); **Moss rose** (*Portulaca grandiflora*): W L 10; **Pansy** (*Viola x wittrockiana*): C D 10-15; **Petunia** (*Petunia x hybrida*): W L 10; **Phlox** (*Phlox drummondii*): C D 10; **Pincushion flower** (*Scabiosa atropurpurea*): W D 15; **Salvia** (*Salvia splendens*): W D 15; **Snapdragon** (*Antirrhinum majus*): W D 15; **Spider flower** (*Cleome hassleriana*): W D 30; **Statice** (*Limonium sinuatum*): W D 15; **Strawflower** (*Helichrysum bracteatum*): W L 10; **Swan river daisy** (*Brachycome iberidifolia*): W D 10-15; **Sweet pea** (*Lathyrus odoratus*): C D 20 (Soak seeds overnight in warm water before sowing.); **Verbena** (*Verbena bonariensis*): W D 20; **Verbena, garden** (*Verbena x hybrida*): W D 20; **Zinnia** (*Zinnia elegans*): W D 5-10



BIENNIALS AND PERENNIALS

Balloon flower (*Platycodon grandiflorus*): W L 20; **Basket-of-gold** (*Aurinia saxatilis*): W L 10-15; **Blackberry lily** (*Belamcanda chinensis*): W D 20; **Black-eyed Susan** (*Rudbeckia fulgida*): W D 20; **Blanketflower** (*Gaillardia x grandiflora*): W L 15-20; **Blue fescue grass** (*Festuca ovina glauca*): C D 25; **Candytuft** (*Iberis sempervirens*): C D 15-20; **Canna** (*Canna* hybrids): W D 10-15 (Nick seeds with a sharp knife, then soak in warm water for 24 hours before sowing.); **Carpadian bellflower** (*Campanula carpatica*): W L 15; **Catmint** (*Nepeta x faassonii*, *N. sibirica*): W D 10; **Chamomile, dyers'** (*Anthemis tinctoria*): W D 10-15; **Chrysanthemum, garden** (*Chrysanthemum x morifolium*): W D 10; **Columbine** (*Aquilegia* spp. and hybrids): W L 20-25 (After sowing, place pot of seeds in a plastic bag and refrigerate for 3 weeks to break dormancy.); **Coreopsis** (*Coreopsis grandiflora*): W L 20; **Cornflower, perennial** (*Centaurea montana*): W D 10; **English daisy** (*Bellis perennis*): W D 10-15; **False indigo** (*Baptista australis*): W D 10-20 (Nick seeds with a sharp knife, then soak in warm water for 24 hours before sowing.); **Fountain grass** (*Pennisetum alopecuroides*): W D 20; **Foxglove** (*Digitalis purpurea*): W D 15-20; **Gayfeather** (*Liatriis spicata*): W D 20-25; **Hardy hibiscus** (*Hibiscus moscheutos*): W D 15-25 (Soak seeds overnight in warm water before sowing.); **Hollyhock** (*Alcea rosea*): W L 10-15; **Iris, Japanese and Siberian** (*Iris ensata*, *I. sibirica*): W D 30 (After sowing, place pot of seeds in a plastic bag and refrigerate for 4 weeks to break dormancy.); **Mallow** (*Malva moschata*): C D 5-10; **Mountain sandwort** (*Arenaria montana*): C L 15-20; **Pincushion flower, perennial** (*Scabiosa caucasica*): W D 15-20; **Pinks** (*Dianthus* spp. and hybrids): W D 10; **Primrose, polyanthus** (*Primula x polyantha*): C L 30; **Purple coneflower** (*Echinacea purpurea*): W D 15-20; **Pyrethrum, painted daisy** (*Chrysanthemum coccineum*): W D 15-20; **Rock cress** (*Aubretia* hybrids): C D 20; **Sea lavender** (*Limonium latifolium*): C D 10; **Sea oats grass** (*Chasmanthium latifolium*): W D 20 (After sowing, place pot of seeds in a plastic bag and refrigerate for 4 weeks to break dormancy.); **Shasta daisy** (*Chrysanthemum x superbum*): W L 10-15; **Soapwort** (*Saponaria ocyroides*): W D 10-15; **Sweet pea, perennial** (*Lathyrus latifolius*): C D 20-30 (Soak seeds overnight in warm water before sowing.); **Sweet William** (*Dianthus barbatus*): W D 5-10; **Thrift** (*Armeria maritima*): W D 15-20 (Soak seeds overnight in warm water before sowing.); **Viola** (*Viola cornuta*): C D 10-15; **Yarrow** (*Achillea millefolium* hybrids): W L 10

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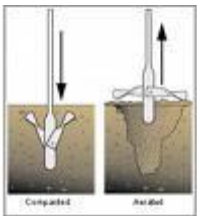
I found this information in Country Living Gardener magazine (looks like it was in 1995) and have been using it ever since. It is a real help when planting seeds indoors. Note that not all plants are suitable for starting indoors.

CHAPTER SEVEN – Recycling and Composting

If you are teaching about reducing, reusing, recycling, you must model them as well. This is difficult and time-consuming. When we are busy, it is easier to just throw out scraps into the garbage. I have listed here some ideas to reduce garbage at your school.

Composters

We have a commercial composter set up outside at our school. We try to collect lunch and snack food scraps and put them in. There is definitely the worry about wild animals being attracted to the compost, although we have not had any yet. This year, I purchased a composter aerator which we will use to keep it mixed so that the fresh scraps are not so tempting. This tool is like



a long arrow head that will poke through the compost and, as you lift up, some times open and pull up the compost from the bottom to the top.



Ideally, you should have two composters – so that when you fill one, it can do its work in making rich compost, while you work on filling the other.

In some larger centres (such as Thunder Bay), the composter shown above is available to residents only at a reduced cost, however, there are several different types on the market.

Keeping consistent in using it is a challenge—both in having the students (and staff) use it, and emptying it into the composter. I have set up big coffee cans for compost right on top of the garbage can, but they get smelly and gross. Ice cream pails work well too and have a handle so they can be carried outside easily.



GREEN IDEA

Set up coffee cans or ice cream pails in the staff room and student lunch room near the garbage cans. This makes it easier for everyone to throw their fruit and vegetable scraps in for the composter (s).

Vermiculture Composters

The Junior Class at our school (Grades 3, 4, 5) takes care of the vermiculture composters. They have three buckets of them now. The Red Wiggler worms multiply quickly. Recently some castings were harvested from the large Rubbermaid containers. This will be bagged and sold for “compost tea” at a school event.



We originally contacted Earth Works (Leslie Kirby) at Earth Works Ecosystems to do a presentation to our students. This got us going with vermiculture and the Junior students have been going ever since!



CURRICULUM CONNECTIONS

Science and Technology – Big ideas - Habitats and Communities; Interactions in the Environment; Ecosystems; biotic/abiotic elements.

UPSALA PUBLIC SCHOOL CHILDREN'S GARDEN COMPOST TEA FOR PLANTS AND GARDENS Made From All-Natural, Earth-Friendly Vermicompost/Castings

1. Combine contents of package with 2 litres of water. Let “steep” for 24 hours and water plants with Compost Tea!
- OR
2. Use directly on plants by working 1 tbsp. of compost into soil around base of plant and water as usual.

Aluminum Can Recycling

Each spring, our school participates in a clean-up of our community in conjunction with Pitch-In Week (see Pitch-In Canada <http://www.pitch-in.ca/Pitch-In.php>). During that clean-up, we ask that parents bring their aluminum cans and put them in our bin. Send a note home asking that parents drop their cans into the bin throughout the



year. In Thunder Bay, aluminum cans are accepted at Dutchak Scrap Metal and Recycling on Hammond Street. A truck load of cans can bring you anywhere from \$30.00 - \$60.00 (depending on whether they are crushed). They weigh the cans on a big scale and pay a per kilo price for the aluminum. This is fairly easy money; although you do need someone to volunteer to do it (my husband is my —g-to— guy).

On a nice sunny day I take the primary students outside to do math by sorting, grouping and counting cans. They love it!! (Make sure they wear gloves).



CURRICULUM CONNECTIONS

Mathematics – Big ideas – Data Management, Numeracy - sorting, counting, place value (groups of ten cans and then 100 cans), money (counting beer bottles at 10 cents each).

Rain Barrel

I purchased a rain barrel, but have not yet made it operational. We need to change/add some eavestrough and make or buy a stand for it. Watering plants from a rain barrel is much better for the plants because the water is warm. The cold hose water shocks them (and consequently slows down their growth and production). There are lots of different models you can buy. Ask your custodian if s/he can set it up or ask a parent to volunteer to do this for the kids.



Aqua Spikes

I'm putting this watering idea under recycling and composting because it works in conjunction with the rain barrels and you use recycled pop bottles. Kids can fill up the bottles from the rain barrels. The water soaks slowly into the ground and gets to the roots, rather than spraying the plant's leaves, risking "burning" them (what happens is the sun reflects or refracts through the water droplets on the leaves and actually scorches the plant's leaves).

Also, when you just spray the plant or the soil, much of the water either runs off or evaporates. The water needs to get to the roots so it can be absorbed by the plant. I ordered aqua spikes this year (2010) from T & T Seeds in Winnipeg.



GREEN IDEA

Ask families to send in pop bottles to use with the Aqua Spikes. (If you don't have Aqua Spikes, just fill the bottle and stick the neck into the ground – my mother-in-law has been doing that for years – the water still slowly seeps out to the roots of the plants).

Leaf Mould

I discovered this by accident. I had left a black, plastic bag full of leaves under my deck for two or three years. When I went to move it, the bag fell apart and inside was the most delicious looking compost stuff. I did some research and found that leaf mould is a good additive to the garden. I used mine as a mulch. If you have lots of leaves, make leaf mould. It is the process of leaves rotting. Just put the leaves in a black, plastic bag and tie it up. Wetting the leaves makes them decompose faster. Poke some holes in the bag and leave it for a year (maybe two). Free and easy!



CHAPTER EIGHT – Harvesting and Preserving

This is an exciting time! Our summer volunteers were told to take any vegetables that had matured over the summer and use them. We were lucky the first year to have tons of peas ready when we started school the last week of August. The radishes and green onions were ready in July. The onions were from onion sets so they continued to grow right until frost.



The first year, we only grew one green pepper, but it was a beaut! We cut it into small pieces and we all had a taste. It was the best ever!



Our potato crop was good in 2009. We celebrated the potato harvest with a Potato Math Event Day (See Chapter Eleven where the day is explained in detail).



We sent home potatoes and dried parsley from our garden. This continues to strengthen the home-school connection.

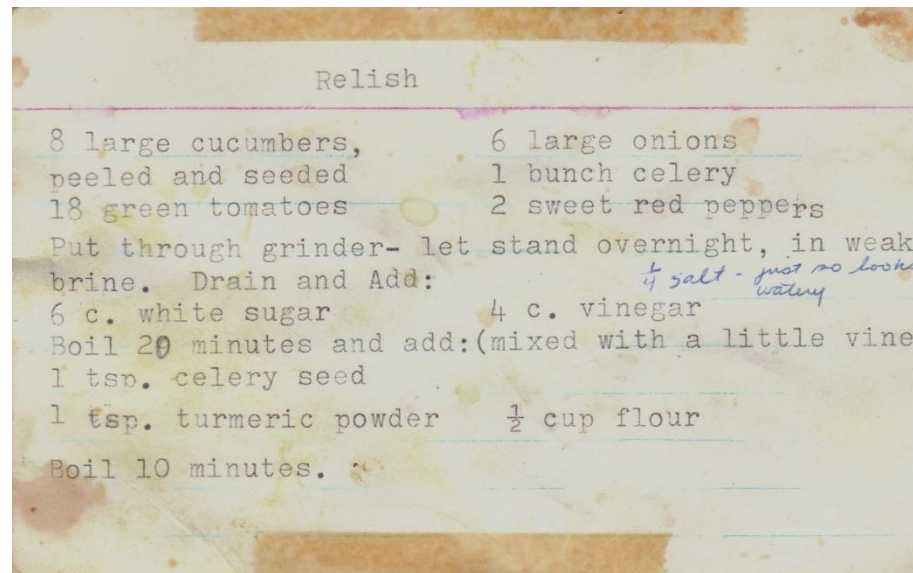


The parsley, as well as garlic and other herbs, were dried in a dehydrator.



CURRICULUM CONNECTIONS

Health and Physical Education – Big ideas – Daily physical activity; active participation – it is hard work digging and scrubbing those potatoes!



This recipe of my mom's is a good way to use up green tomatoes. We had oodles of them! We sold the relish, as well as jams and jellies made with donated produce (See Chapter Ten about fundraising).



CURRICULUM CONNECTIONS

Mathematics – Big ideas – measurement, counting (each batch of relish used about 240 little tomatoes), ratio, estimation; money: calculation of cost of jars and ingredients to determine selling price of preserves.

CHAPTER NINE – Money – How to Get It

- Applications to Financial Partners

I was amazed at how much money is out there; however, it takes work to get it. Funding proposals take a lot of time to prepare; you must spend the money exactly as you propose; and you must keep accurate records so that you can complete a Report on Funding at the end. There are all sorts of deadlines to watch for. The Evergreen Application is very ridged. They are very strict about planning and suggested several changes to my Proposal before it was accepted.

So far, I have sent in Proposals for Funding to the following financial partners: I have been successful in all, except Earth Day Canada. There is something empowering about completing these. I have become hooked on it!

1. **CODE (Council of Directors of Education).** In February, 2008, they sent a letter to all district school boards, school authorities and provincial schools offering funding to support Environmental Education. The Proposal had to contain links from *Shaping Our Schools, Shaping Our Future*. The maximum funding amount was \$3,000.00.
2. **Lakehead University Food Security Research Network.** The Research Network is interested in promoting, supporting and sustaining local food production. The Director is Dr. Connie Nelson.
3. **Toyota Evergreen Learning Ground.** Evergreen provides funds for greening projects on school grounds. The application can be found online. The website includes sample applications as well as a native plant database, which is very helpful when completing the application. Schools are eligible for \$500.00 - \$2,000.00. Of course, go for the maximum!
www.evergreen.ca/en/funding/schools
4. **Canadian Wildlife Federation.** The WILD Education School program is a wildlife habitat stewardship education program. www.cwf-fcf.org is the main website of the Canadian Wildlife Federation. Also check out www.wildeducation.org. The funding amount from WILD Education is \$500.00.
5. **Green Apple School Program – A Metro Initiative.** The website is <http://www.greenapplegrants.ca/home.en.html>. It is an initiative to encourage conservation and healthy living. It is easy to submit your —Green Idea.” They give \$1,000.00 for accepted green ideas.

6. **Green Street** is a not-for-profit program seeking to create a movement in schools centred on young people acting now, and with other members of their community, to create a sustainable future. Contact Pauline Theoret at info@green-street.ca, Youth Leadership Challenge, Green Street Program, Canadian Teachers' Federation. The amount given is \$750.00.
7. **Earth Day Canada (EDC) Community Environment Fund** (unsuccessful). This organization provides grants of up to \$20,000.00 to support local environmental initiatives. My proposal is for a Community Garden Extension to our School Garden Project. If we were successful, we would provide 36 families with a Garden Kit which will get them started on their own household gardens. Check out www.earthday.ca/envirofund. The next grant period opens April 23rd with a submission deadline of August 31st.

Suggestions For Completing Proposals:

Make sure that all staff has an opportunity to review the Proposals before they are submitted. If you are reading this you are probably a teacher who is motivated to start a garden and do a lot of work for it, but give other teachers and staff the opportunity to come on board. Many schools have teams and that is helpful because of the work involved. Getting input from other teachers helps them buy into the idea of changing the way they teach some of the curriculum by using the garden for authentic learning. It can be a slow process – be patient (not my strong suit)!

Check prices before submitting Proposals. Evergreen is very specific about what plants are purchased, so you might as well go to the garden centres and get accurate prices on specific plants that you will be purchasing, so you will be ready to buy when your Proposal is accepted. (Notice I said —~~when~~” not —if” – think positively!)

Include students in the Proposal process – ask them what they want to learn. We found some interesting things when asking students what they would like to have in their garden:

- Make a garden border with pebbles.
- Make a garden with gnomes, scarecrows, water frog.
- Make a mini flower garden for each class.
- Plant different kinds of plants – sunflowers, beanstalks, watermelon.
- Have a Garden Tea and dress up.

When I completed the Canadian Wildlife Federation Proposal, the Junior students researched information about butterflies and hummingbirds and found the names of plants we should plant to attract them to our garden.

Examples of Some Proposals and Reports

I am going to list three examples of funding proposals and the final reports: Council of Directors of Education (my first application and report); the Canadian Wildlife Proposal, which the students helped with; and the Green Apple Proposal, which was very short. I have not done the final report on the Green Apple grant yet.

Some funding partners have specific formats to use. Note that the Canadian Wildlife Federation did not have a standardized report. I sent them pictures along with the financial information. They recently sent us a plaque as an honourable mention for our work with them. Make sure that you go over budget by a little bit so that you don't have to send any funds back.

PROPOSAL TO CODE (COUNCIL OF DIRECTORS OF EDUCATION)

GENERAL INFORMATION

Name of Provincial School / School Authority: Upsala Public School
Signing Authority: Upsala DSA Board **Total Funding Request:** \$ 2,997.75
Contact name: Shirley Niemi
Telephone: (807) 986-2352 **Fax:** (807) 986-1409
E-mail: clysak@upsalapublicschool.on.ca

PROPOSAL DESCRIPTION

Title of Project: Upsala School Children's Garden

LINKS WITH RECOMMENDATIONS: Which specific recommendations, contained in *Shaping Our Schools, Shaping Our Future*, does the proposal connect with?

11. Increase the cross-curricular focus of environmental education by embedding environmental expectations and topics across all subjects, disciplines and grades.
24. Use the natural and human-built environments as sites of discovery and active learning, involving projects that invite problem solving, as well as first-hand experiences that put students in touch with nature.

PROPOSAL DESCRIPTION: Describe in 500 words or less, what your project aims to accomplish, the intended audience, and anticipated outcomes.

Upsala is a small community located in Northwestern Ontario. The community has one public school, which has an enrolment of 35-45 students annually, in Grades JK-8. The school also contains a Best Start Daycare Centre for after-school care of school-aged children, and an Early Years Playgroup for pre-school children from the community. The school also provides after-school community activities through Keeping Good School Open, a Board-funded program designed to create extra-curricular experiences.

The community relies heavily on forestry-based industry. The forestry industry in Northern Ontario has suffered in recent years, resulting in numerous layoffs of the parents and grandparents of the Upsala School students. This has created economic hardships for many of the students at the school.

Although a rural community, emphasis has not been placed on growing food. Many of the students in the school have never had a family garden, despite the economic and environmental benefits of doing so. A simple survey of the students at the school revealed that almost two-thirds of the students do not have a vegetable garden or a flower garden nor have they had any experience with one. Sixty percent of students have *never* transplanted any kind of plant!

The school has planted fruit trees on the property and currently has some hardy apple trees, plum trees, and grapes. The school is equipped with an attached greenhouse/solarium on the south side of the building, measuring approximately 20' x 7'. This would be the perfect area to start seedlings for transplanting into a garden bed; however, due to inadequate ventilation, the seedlings become overheated, dehydrated, and die before they are ready to transplant. Part of the funds requested in this Proposal would be used to make the current greenhouse/solarium functional so plants could be started for future use.

The second portion of the funds requested in this Proposal would be to implement Phase I of a Children's Garden. The vision of this garden would include: geometrically-shaped, raised garden beds with surrounding seating; mulch-covered pathways; reflective, contemplative areas with benches; an area for sand play; and a grassed area. It is hoped to use the raised beds to grow the plants started in our refurbished greenhouse/solarium. A first step is to create a "Pizza Garden" which would include wheat to grind for the flour; tomatoes to make sauce; peppers; onions; and herbs.

Our project aims to create an outdoor education classroom to accomplish the cross-curricular focus of environmental education by embedding the garden into numerous curriculum areas. As examples (but not limited to):

Healthy Living: identify food groups, identify a balanced diet and create menus for healthy meals;

Physical Education: participate in physical activities that maintain or improve physical fitness; apply living skills to physical activities;

Mathematics: Measurement (capacity, time, linear, temperature, area, perimeter); Data Management (charts and graphs to record growth, etc.); Geometry (geometric-shaped raised beds);

Science: Soils in the Environment; Growth and Changes in Plants; Needs and Characteristics of Living Things; Daily and Seasonal Cycles; Air and Water in the Environment; Habitats;

Visual Arts: elements of design (colour, line, shape, form, space, texture)

Social Studies: The Local Community; Features of Communities Around the World; Urban and Rural Communities.

The intended "audience" (we would prefer the word "participants") would be the students of the school, the daycare students, the playgroup children, the teachers and staff, and the community through Keeping Good Schools Open. The anticipated outcomes of the Upsala School Children's Garden would be a reconnection with growing plants, discovery and active learning involving projects that invite

problem solving, as well as first-hand experiences that put students in touch with nature.

Thank you for considering our proposal.

INDICATORS OF SUCCESS: What indicators do you plan to use to measure the impact of this initiative on environmental knowledge, practices, skills, and perspectives?

1. Re-survey students to determine experiences, knowledge base, and skills in growing vegetables for food, flowers and trees for habitats;
2. Teacher observations and anecdotal record-keeping in curriculum areas;
3. Increased parental involvement and support of student activities.

BUDGET SUBMISSION TEMPLATE (B)

BUDGET: What are the anticipated expenses for the project? *(Expand if necessary)*

PROJECT: Greenhouse/Solarium Refurbishment

Item	Exhaust Fan including motorized damper and reverse-acting thermostat, including tax	\$1,670.00
Item	Labour to install Exhaust Fan and components	\$ 300.00

PROJECT: Phase I – Upsala School Children’s Garden

em	Cedar 4” x 4” for raised beds and walkway edges 156’ @\$2.50/sq.ft	\$ 390.00
Item	Cedar 2” by 6” for seating on raised beds – 52’ @2.00	\$ 104.00
Item	Labour to build raised beds (3 hrs @ \$20.00/hr)	\$ 60.00
Item	Landscape Fabric 4’ wide by 60’ long (60’ @\$2.00/ft.)	\$ 120.00
Item	Shredded Mulch 1 yard @ \$90.00/cubic yard	\$ 90.00
Item	Anchor pins 240 @ \$0.20	\$ 48.00
Item	Delivery of Shredded Mulch	\$ 100.00
Item	Soil for raised beds 14 cubic yards – free (donated)	\$ 0.00
Item	Delivery for soil – free (donated)	\$ 0.00
Item	Labour to fill raised beds (2 hrs @ \$20.00/hr)	\$ 40.00

Item	Planting trays – 15@ \$1.50	\$ 22.50
Item	½ bale seedling mix @\$29.99	\$ 15.00
Item	Clear Plastic domes lids for planting trays – 15@ \$2.00	\$ 30.00
Item	1/3 bale potting mix @\$24.99	\$ 8.25

Funding Request	\$2,997.75
Maximum \$3,000.00	

OTHER SOURCES OF FUNDING: *(e.g., community / parent council / board funding)*

An application to Toyota Evergreen Learning Grounds for funding for Phase II of our Children’s Garden will be submitted in Fall, 2008;

A possible partnership with Lakehead University as a location for a Community Garden is being pursued for Spring, 2009.

Donated loam for raised beds.

Qualified staff at garden centre in Thunder Bay will review sketches and provide advice at no cost.



The following is a summary of Actions in Progress, Actions Completed, and Funds Spent:

REPORT ON FUNDING – C.O.D.E.

SUBMITTED TO: Council of Ontario Directors of Education

Re: Environmental Education Proposal

PROGRESS REPORT: (Submitted by June 15th, 2008)

GENERAL INFORMATION

Name of Provincial School / School Authority: Upsala Public School

Signing Authority: Upsala DSA Board **Total Funding Received:** \$ 2,997.75

Contact name: Shirley Niemi

Telephone: (807) 986-2352 **Fax:** (807) 986-1409

E-mail: clysak@upsalapublicschool.on.ca

PROPOSAL DESCRIPTION

Title of Project: Upsala Public School Children's Garden

Attached is a copy of our garden plan. We have had substantial parent and community support in creating the garden so far. Two "Garden Bees" have been undertaken and were very successful (increased parental involvement and support of student activities was a goal indicated in our proposal to you). The raised beds were assembled. Soil, mulch, manure and peat moss were mixed and used to fill the beds. Existing plantings were weeded. Landscape fabric and mulch were laid. A sand play area was created from cedar lumber.

The older students calculated the capacity of the raised beds. They calculated the cubic yards of soil required to fill the beds. This involved using the Pythagorean Theorem as our pizza garden is made up of six equilateral triangles. This also involved conversion from Imperial measurements to the metric system, as our lumber was purchased in feet and inches and soil is measured in cubic yards, not cubic metres. This provided an opportunity for authentic, real-world mathematical calculations.

Students have planted vegetable seeds and vegetable plants directly into the garden. They have planted tomatoes, wheat, garlic, onions, peppers, and herbs in the pizza garden. They have planted potatoes, beans, peas, corn, rhubarb, onions, squash, and strawberries in the vegetable garden. The younger students have shown pride in what has been accomplished. They show respect and are careful to not damage plants. They are eagerly checking the garden each day for signs of sprouts.

The greenhouse/solarium fan and components have been purchased and will be installed so plants can be started indoors next spring. The greenhouse/solarium has been organized and seedling mix, trays, and potting soil have been purchased for next year's plantings.

ACTIONS IN PROGRESS	ACTIONS COMPLETED	FUNDS SPENT
	Exhaust Fan including motorized damper and reverse-acting thermostat has been purchased and delivered to school – Thunder Bay Co-Op Supplies	\$ 613.17
Labour to install Exhaust Fan and components – Installation scheduled for week of June 16 th , 2008 – honorarium to be paid		\$ 300.00
	Cedar 4 x 4" and 2 x 6" lumber has been delivered. Raised beds have been built and assembled for the pizza garden, the vegetable garden and the sand play area (see copy of plan attached) – Chimo Building Supplies. Note: Originally, only two-sixths of the pizza garden was in the budget due to the higher cost of the fan estimated in the Proposal. We were actually able to complete the entire pizza garden, the vegetable garden and the sand play area.	\$ 1,375.89
	Landscape Fabric and anchor pins purchased for pizza garden area – Landale Garden Centre. This has been installed and covered with mulch.	\$ 359.90
	Labour to cut cedar and build raised beds – honorarium paid	\$ 180.00
	Stepping stone materials purchased – stones made by Primary Class	\$ 19.19 \$ 7.90
	Tools purchased – spades and hand tools – Canadian Tire	\$ 76.78
Human Sundial – to be constructed	Plans have been ordered – Needham Science Centre – based on longitude and latitude of Upsala Public School – not yet received. Cedar has been purchased for posts (12 needed) and is on site.	\$ 6.06 \$ included in cost of cedar above
Rain barrel yet to be set up. Downspouts need to be cut; stand to be constructed for the rain barrel.	Composter and rain barrel have been purchased and are on site – Eco-Superior. Composter has been set up.	\$ 65.00
Life-size checkerboard – to be constructed. Involves laying stones in checkerboard pattern. Still needed: checker pieces – perhaps pieces of wood sawed from a log?	Stones (1' x 1') have been purchased for the checkerboard (32 stones) – Canadian Tire	\$ 79.19
	Private donation of \$100.00 for the purchase of a garden bench – purchased from Vanderwees Greenhouse. Actual cost including tax was \$112.99. Tax paid.	\$ 12.99
TOTAL SPENT TO DATE		\$ <u>3,096.07</u>
		\$ <u>(98.32)</u>

June 15, 2008

Date Submitted (dd/mm/yyyy)

PROPOSAL TO CANADIAN WILDLIFE FEDERATION

WILD School Habitat Project Registration Form (PLEASE PRINT)

mailed
Mar. 13/09

Name of school UPSALA PUBLIC SCHOOL

Number and street GENERAL DELIVERY

City UPSALA Province/Territory ON Postal code POT 2Y0

Telephone (807) 986-2352 Fax (807) 986-1409

E-mail snieni@upsalapublicschool.on.ca Website address www.upsalapublicschool.on.ca

Full name of teacher(s)/leader(s) supervising project(s) Mrs. Shirley Niemi

Grade level(s) JK-8 Total number of students 28

Identify organizations/agencies that will be involved in the project Staff and students at school, (Early Years / Best Start), Playgroup Children, Daycare Children, Community through Keeping Good School

Date project will begin Spring, 2009 Anticipated date project will be completed FALL 2009

Project description (ATTACH ADDITIONAL SHEETS TO THIS FORM IF MORE SPACE IS NEEDED)
See Addendum with attachments

PLEASE INCLUDE A SKETCH OF YOUR LAYOUT AND PHOTOGRAPHS OF KEY FEATURES.

a) Title of project Upsala Public School Children's Garden

b) Describe the goal of your project and what ecological concepts will be covered
Importance of pollinators to our food supply. Creating habitats for pollinators to improve our vegetable garden. Interconnectedness of

c) Describe how your project will improve wildlife habitat and how wildlife will benefit plants and animals.
Increasing the number of habitats for pollinators such as hummingbird and butterflies as one-third of food we eat is there because of a pollinator.

Describe how students will be involved in the project (ALL PROJECTS MUST BE STUDENT-DRIVEN TO BE ELIGIBLE FOR FUNDING)
Students have conducted research into plant species specific to butterfly and hummingbird habitats.

Describe what learning outcomes will be achieved by doing this project
See learning outcomes as outlined in Addendum

Species of wildlife primarily affected by project (CHECK MORE THAN ONE IF APPLICABLE)

☒ Birds ☐ Fish ☐ Mammals ☒ Insects ☐ Reptiles ☐ Native plants ☐ Amphibians

Other (SPECIFY)

Check off the best description(s) of your project

a) Location ☒ School grounds ☐ Wetland ☐ Park ☐ Other (specify) _____
b) Setting ☐ Urban ☒ Rural ☐ Other (specify) _____

Provide specific information on how your project meets the essential needs of wildlife

Food (E.G., FRUIT-BEARING SHRUBS OR TREES, NATIVE WILDFLOWERS OR FEEDERS FOR BIRDS AND/OR POLLINATORS)
Native wildflowers and perennials

Shelter (E.G., TREES, SHRUBS, BRUSH PILES OR NESTING STRUCTURES) butterfly houses, water source, maple grove and pine trees nearby

Water (E.G., BIRD BATH, POND OR RECIRCULATING STREAM) rain barrels and mud areas

Space (E.G., DIVERSE LAYERS OF VEGETATION; TALL AND SHORT PLANTS OR FLOWERS CAN INCREASE A SPECIES' "SPACE") Existing and proposed Project includes vines, trees, flowers, structures at varying heights to increase space.

Area measurements of project, in metres or kilometres (IF APPLICABLE) See Project Plan attached

Complete this section if you are applying for funding. All projects must be directly related to wildlife habitat improvement to be eligible for funding assistance. Beautification projects are not eligible. Funds are available for supplies needed specifically for projects, such as native plants and trees, seeds, hardware, lumber and signs. Common hand tools and clothing are not eligible. Do not exceed the \$200 class or \$500 school limit. Long-term projects are eligible for funding consideration each year.

Detailed list of supplies, plants, shrubs, trees, rented equipment, etc.

Items	Cost
30 Perennials @ 9.99 (see list in Addendum)	\$ 300.00
Lumber for butterfly houses and bench to sit + view	\$ 40.00
Soil amendments (manure and mulch)	\$ 85.00
Delivery of items to Upsala	\$ 75.00
Total Amount Requested	\$ 500.00

If your class/school is receiving funds from other sources, please indicate name(s) of organization(s) and amount(s):

Organization(s)	Amount(s)
CODE (COUNCIL OF DIRECTORS OF EDUCATION)	\$ 2,997.00
LAKEHEAD UNIVERSITY FOOD SECURITY RESEARCH	\$ 2,500.00
TD/TOYOTA EVERGREEN LEARNING GROUNDS	\$ 2,000.00

We acknowledge that if our request for funds is approved, we will provide the Canadian Wildlife Federation with photos and a written description of our completed project. We have permission for our project and will ensure that the project is properly supervised. All funds received will be applied to the project described above. Attached is a signed letter on our school's/organization's letterhead from the teacher(s)/leader(s) supervising this project.

CWF occasionally features outstanding projects in its magazines, newsletters, websites and other promotional materials. I authorize the Canadian Wildlife Federation to use information and photographs provided in future resource publications. ☐ Yes ☐ No

Signed J. Niemi Date MARCH 9, 2009

Print name SHIRLEY NIEMI Position LEAD TEACHER, GARDEN PROJECT

ISBN: 1-55029-206-4

PRODUCT CODE: CWF-EDFRM09E

TO: Canadian Wildlife Federation

March 9, 2009

FROM: Upsala Public School
General Delivery
UPSALA, ON P0T 2Y0
(807) 986-2352
Shirley Niemi, Teacher Lead,
Upsala Public School Children's Garden

RE: WILD School Habitat Project

Addendum to Funding Application

Upsala is a small, rural community approximately 150 kms. west of Thunder Bay. Most residents work or are connected with the forest industry. Many parents of our students are laid off. The public school has about 30 students from JK-8. Although the school population is small, the students have big hearts!

We began Upsala Public School Children's Garden in the spring of 2008. We worked hard to create raised vegetable beds to learn about growing our own food. We had lots of help from our parents, grandparents, and neighbours to get the garden going. It was a lot of work to make the raised beds and to fill them with soil and to plant all the plants.

We grew many vegetables, including potatoes, carrots, peas, corn, radishes, onions, garlic, and some herbs. We even grew wheat so that we could understand where flour came from.

We had the grandfather of one of our students help us learn about growing HUGE pumpkins, but even though the pumpkin plants produced flowers, the pumpkins did not form. We believe that we do not have enough pollinators in our garden.

This is why we want to create a habitat where pollinators such as butterflies and hummingbirds will want to live. We have been researching what sorts of plants pollinators especially like. We want to plant some perennial plants so that they will come back each year. We are in Zone 2-3 so we looked for native plants that would survive here.

These are things we learned about pollinators:

- Creatures such as butterflies, hummingbirds, and honeybees are called pollinators because they carry pollen on them from one plant to another of the same species, ensuring that plants reproduce.
- We learned that they are the biggest factor in the production of our fruits, vegetables and flowers. Every third bite of food we eat is there because of a pollinator.
- We know that a habitat must provide plants and animals with the necessities of life (e.g., food, water, air, space, light, and shelter).
- We can attract butterflies and hummingbirds to our garden if we provide them with food, water, and shelter.

- To attract butterflies and hummingbirds, we need to provide flowering plants which are rich in nectar. Butterflies visit flowers with tubes short enough for their proboscis to reach the blossom's nectar. They prefer flowers with "landing pads" so they can sit while they sip the nectar. Hummingbirds visit trumpet-shaped blooms because they can reach nectar deep inside the bloom. They will also visit flowers with short tubes. We learned that we need to have a continuous nectar supply so we need plants that bloom in the spring, the summer, and the fall.
- To encourage butterflies to stay in the garden, it is not enough to just provide them with nectar. We must provide them with "host plants" on which to lay their eggs. These plants are different for different butterflies and are the food source for the caterpillars. We learned that swallowtail butterflies like herbs such as dill, fennel and parsley. We learned that monarch butterflies like milkweed.
- We know that we cannot use pesticides in the garden or we will kill the hummingbirds and butterflies.
- We want to make some butterfly houses for shelter for the butterflies and to provide a water source.
- We encouraged our families to bring us to the school over the summer of 2008 so that we could look after the garden. Our families signed up to be responsible for the garden for one week each, and during that week, watered plants, picked weeds, picked vegetables, etc. We know that this will continue over the summer of 2009.
- We will be having a "Garden Bee" where we will be inviting our families to help us plant the perennials and construct the butterfly houses. We will be involved in all aspects of the project.
- Our Junior Class has already learned about Habitats and Communities in their Understanding Life Systems Science Strand, so they will be solidifying that knowledge in a hands-on way with this aspect of our garden project.
- Learning Outcomes to be achieved by the project are:
 - demonstrate an understanding of habitats and communities and the relationships among the plants and animals that live in them.
 - analyse the effects of human activities on habitats and communities
 - investigate the interdependence of plants and animals within specific habitats and communities.

(Ontario Science Curriculum Expectations)

Attachments:

- Our Project Plan showing existing components and location of proposed butterfly and hummingbird habitats
- List of plants we want to buy
- Picture of butterfly house(s) we want to build

Thank you for your support!

Students of Upsala Public School
Upsala Public School Children's Garden

Ruby Throated Hummingbird

Nectar Sources:

Raspberry Autumn Sage (*Salvia greggii*)
Salvia "Mystic Spires" (*Salvia longispicata* x *farinacea*)
Moss Verbena (*Verbena tenuisecta*)
White Angel Bluebonnets (*Lupinus texensis*)
Showy Primrose (*Oenothera speciosa*)
Jewelweed (*Impatiens capensis*)
Red Flowering Current (*Ribes sanguineum*)

Spring Blooming Plants

Bleeding Heart (*Dicentra formosa*)
Wild Tiger Lilies (*Lilium philadelphicum*)

Summer Blooming Plants

Common Yarrow (*Achillea millefolium*)
Lavender Hyssop (*Agastache foeniculum*)
Nodding Pink Onion (*Allium cernuum*)
Bee Balm (*Monarda didya*)
Showy Sunflower (*Helianthus laetiflorus*)
Evening Primrose (*Oenothera biennis*)
Columbine (*Aquilegia Formosa*)
Harebell (*Campanula rotundifolia*)

Fall Blooming Plants:

New England Aster (*Symphyotrichum novae-angliae*)
Goldenrod (*Solidago canadensis*)
Showy Sunflower (*Helianthus laetiflorus*)

Butterflies

Nectar Plants

Delphinium (*Delphinium belladonna*)
Mealy Blue 'Queen Victoria' Salvia (*Salvia farinacea* 'Queen Victoria')
Coreopsis 'Nana' (*Coreopsis suriculata* 'Nana')
Poppies (*Papaver rhoeas*)
Butterfly Bush (*Buddleia davidii*; *Buddleja davidii*)
Joe Pye Weed (*Eupatorium maculatum*)
Liatris (*Liatris spicata*)
Pale Purple Coneflower (*Echinacea pallida*)

Butterfly Larval Plants

Herbs such as Dill, Fennel, Parsley
Hollyhock (*Althaea rosea*, *Alcea rosea*)
Black-Eyed Susan (*Rudbeckia hirta*)
Milkweed (*Asclepias syriaca*)

I made a mistake on this funding application—I included amounts for delivery and mulch, which were not fundable (I'm not sure where in the instructions it said that but, as a result, we only obtained half of the funds requested (\$250.00 instead of \$500.00). We were not able to purchase all the plants on the list prepared by the Junior Students, but I purchased several of them. They were planted in the "Infinity Garden" in 2009. We put straw on them to help protect them over the winter. We have our fingers crossed that they all survived! Even though I made sure they were native plants suitable for our Zone, we had an early spring thaw of snow and then cold weather. This sometimes kills perennials.

The Infinity Garden in June and September, 2009



REPORT TO CANADIAN WILDLIFE FEDERATION

REPORT ON FUNDING

REPORT DATED: November 21, 2009

REPORT TO: WILD School Program
Canadian Wildlife Federation
350 Michael Cowpland Dr.
Kanata, ON K2M 2W1
Attention: Carole Wheatley
carolew@cwf-fcf.org

GENERAL INFORMATION

Name of School: Upsala Public School

Contact name: Shirley Niemi, Lead Teacher, Upsala School Garden Project

Telephone: (807) 986-2352 **Fax:** (807) 986-1409

E-mail: sniemi@upsalapublicschool.on.ca

Title of Project: Upsala Public School Children's Garden – Infinity Garden

REPORT ON ACTIONS COMPLETED AND FUNDS SPENT

Thank you for your support of our garden! This report will describe the actions completed by us using the funds from the Canadian Wildlife Federation.

- We were successful in creating our butterfly and hummingbird habitat garden. We named it the "Infinity Garden" because of its shape (the infinity symbol) and because the garden contains perennials which will come back year after year.
- The Infinity Garden was created from scratch. We dug and hauled out the sod around the edges and then laid newspaper over the sod in the middle (a version of "lasagna" gardening). The newspaper will not allow the existing sod to grow through and will decompose. We then covered the sod with a triple-mix soil to a depth of about 1/3 to 1/2 of a metre. (Note in the pictures we had an unusually wet spring!)
- We then planted the perennials which were chosen by the students in the Junior Class (Grades 3, 4, 5) to be plants favoured by hummingbirds and by butterflies, both for their larvae and for nectar. We purchased large (1 gallon and 2 gallon) perennials native to our area, as we had outlined in our proposal to you. Plants purchased:
 - Bee Balm (Monarda)

- Bleeding Heart (Dicentra Formosa)
- Tickseed (Coreopsis)
- Joe Pye Weed (Eupatorium Purpureum)
- Blazing Star/Gayfeather (Liatris Spicata Kobold)
- Coneflower (Echinacea)
- Hollyhock (Alcea Rosea)
- Black-Eyed Susan (Rudbeckia)
- Milkweed (Asclepias)
- Red Flowering Currant – (Ribes Sanguineum)
- Butterfly Bush (Buddleia Davidii "Nanho Blue")

- We received donations of daylilies and hummingbird seed mix from community members. We planted these in the Infinity Garden.
- We have purchased signage to mark the plants so that they can be easily recognized in the spring.
- We have obtained straw to cover the plants over the winter.
- We have created a Plant Information Binder in which we have filed the plant tags, as well as information from Lois Hole's book: "Perennial Favorites" so that we can keep track of information about the plants, such as seeding, transplanting, dividing, soil requirements, etc.
- We have had coverage of our garden in the newsletter of the Keewatin-Patricia District School Board. We are enclosing a copy. You will note that the Canadian Wildlife Federation has been recognized as a funding partner.
- We were successful in growing several small pumpkins in our vegetable garden, so we are hopeful that the pollinators are coming to enjoy our Infinity Garden as much as we do!

Thank you again for your support. We are proud of our accomplishments this year. We feel that the students have continued to benefit from the garden initiative in many ways. Their learning while outside in the garden has been authentic learning. Students have ownership of their garden and are proud of it. Thank you.



Signature of Signing Authority



Lead Teacher, Shirley Niemi

November 21, 2009
Date Submitted

Attachments:

- Scanned copy of KP Journal highlighting Upsala Public School Children's Garden
- CD containing this report and before and after pictures, as required by CWF (we note that you will obtain permission if you wish to publish these pictures).


PROPOSAL TO GREEN APPLE – A METRO INITIATIVE

(also see this on-line at <http://www.greenapplegrants.ca/projects/> under “U” for Upsala Public School Children’s Garden)

Project Card

Page 1 of 2

green apple
school program
A Metro Initiative









Upsala Public School Children's Garden

Sustainable Development, Land Use, Environmental Education

Project Leader:
Shirley Niemi

School Principal:
Cheryl Lysak

School
Upsala Public School
General Delivery Hwy. 17, Upsala

Share :      

Project Photos

No picture available.

The Green Idea

Texts in this section are published by project leaders and are not revised by Metro Team.

The project:

Over the last two growing seasons, we have been successful in creating a Children's Garden, which contains a "Pizza Garden" (wheat, tomatoes, peppers, herbs); raised vegetable beds containing corn, carrots, cucumbers, peas and beans; a pumpkin and potato patch; and an "Infinity Garden" containing perennial plants as a habitat for hummingbirds and butterflies. Our next steps are to purchase "season extenders", tools, and materials for preserving our ever-increasing produce.

<http://www.greenapplegrants.ca/projects/card.en.html?project.id=594>

10/04/2010

Project Card

Page 2 of 2

How we'll make it happen:

To continue our Children's Garden project, which to date has had excellent parent and community support, we will require seeds, soil amendments, more garden tools, pots for starting seedlings, another composter, a rain barrel stand, and cedar to create raised beds for spring crops. We want to purchase pumpkin "tents", tomato "enclosures", and frost fabric in order to extend our short growing season in Upsala. We require jars and tools for food preservation and canning.

How it will positively impact the environment:


Our school garden uses only rot-resistant cedar for the raised beds. We compost all lunch waste, either in the Vermiculture composter or the outside composter. Our perennial garden contains plants picked specifically to provide habitats for butterflies and hummingbirds. Our garden is our "outdoor classroom" in which we embed environmental education in all subjects (e.g. Math, Science, Physical Education, Health), as mandated by the Ministry of Education (2009).


How we'll measure its success:

We have conducted surveys to determine the level of gardening knowledge of students, parents, and teachers. Through experience, we determined the need for more pollinators in our garden, so the butterfly and hummingbird habitat was created. This year, we found that our growing season was too short to continue growth of our pumpkins and tomatoes. We are learning each year and the results are measurable through journaling and increased garden knowledge by all involved.

Who's participating :

Our Children's Garden has been established and maintained by a team of school personnel, parents, students, daycare staff, playgroup staff, and community members. These groups attended "Garden Bees" during which raised beds were constructed, soil was hauled, trees planted, etc. Over the past two summers, parents and students looked after the garden for a week each--watering, weeding, and caring for the plants.





<http://www.greenapplegrants.ca/projects/card.en.html?project.id=594>

10/04/2010

The final report on this funding is due June 1, 2010. They do not have a specific report form, so I'll do one along the lines of the others and submit some photographs of the project. It's time-consuming (sometimes takes me hours), but worth it.

Give it a try – submit a ~~green~~ idea!"

CHAPTER TEN – Money – How to Keep Getting It

- Fundraising Ideas

Aluminum Can Recycling

As mentioned previously in Chapter Seven, aluminum cans can be collected and returned. In Thunder Bay, aluminum cans are accepted at Dutchak Scrap Metal and Recycling on Hammond Street. A truck load of cans can bring you anywhere from \$30.00 - \$60.00 (depending upon whether they are crushed). They weigh the bags of cans on a big scale and pay a per kilo price for the aluminum. This is fairly easy money, although you do need someone to volunteer to do it.



Last year for us, this brought in about \$50.00.

Bottle Drive

This is also an easy fundraiser if you have a volunteer who will take the bottles in for you. We do it in conjunction with Pitch-In Day (you can check this out at <http://www.pitch-in.ca/Pitch-In.php>).

Last year, this brought in about \$130.00.

Sale of Jelly, Jam and Relish

We made 127 jars of preserves. Most was made with donated fruit. The relish was made with green tomatoes and onions from our garden. We made pear jam and jelly (thanks to Mrs. Anne Breukelman for making this for us), green tomato relish, grape jelly, apple butter, and apple jelly. We sold them for \$4.50 per jar. We deducted the cost of the jars, Certo,



sugar, additional ingredients for the relish, etc.

At Christmas time, we still had a lot of jars left, so I decided to try to make fancy gift baskets. These sold quite well and may be something we should do next year.

We made about \$200.00 profit on the sale of our preserves.



Sale of Potato Book

In conjunction with our Potato Math Event Day (see Chapter Eleven for information about this theme day), we created an Upsala Potato Book. This was a learning experience. The first two editions were printed on site. Once the ink was deducted, we made about \$200.00 from the sale of 50 books at \$10.00 each. The third edition was taken to a local printer. The result is we have to sell the new edition at \$20.00 each just to break even.

The Upsala Potato Book



Donations for Bedding Plants

We grew more bedding plants last year than would fit in our garden beds. We decided to give them away in return for a donation to the garden fund. We received about \$55.00 for our extra plants!

Fundraising amounts are used for the garden maintenance and for the student account which funds cultural experiences such as the Intermediate class trip to Toronto, which occurs every three years.

CHAPTER ELEVEN – Curriculum Connections

In February, 2009, the Ontario Ministry of Education rolled out *Acting Today, Shaping Tomorrow: A Policy Framework for Environmental Education in Ontario Schools*. This framework was based on the Roberta Bondar Report entitled *Shaping Our Schools, Shaping Our Future: Environmental Education in Ontario Schools* (2007). The Policy Framework for Environmental Education adopted all of the recommendations from the Bondar Report. The vision for environmental education in Ontario adopted by the Ministry of Education is enunciated as follows:

—Ontario's education system will prepare students with the knowledge, skills, perspectives, and practices they need to be environmentally responsible citizens. Students will understand our fundamental connections to each other and to the world around us through our relationship to food, water, energy, air, and land, and our interaction with all living things. The education system will provide opportunities within the classroom and the community for students to engage in actions that deepen this understanding" (*Shaping Our Schools, Shaping our Future*, p.4).

According to the Framework, each School Board in Ontario will have an Environmental Education Policy. Environmental education is to be embedded into every subject, in every grade. A school garden is an authentic, hand-on, experiential way to embed environmental education in the existing curricula, not only in the Science strands, but in all other subjects as well.



CURRICULUM CONNECTIONS

Science & Technology - The connections to Science are the easiest made and appear often throughout this book. Look for the icons. In many cases, the garden can be used to cover entire Science topics.



CURRICULUM CONNECTIONS

Mathematics

Math in the Garden – Important math skills are required in many aspects of gardening. The math strands of Data Management, Measurement, Number Sense, Geometry and Spatial Sense, and Patterning and Algebra can be taught during garden activities. At our school, funding was obtained through the Tutors in Education program to hire a University Student in Concurrent Education to provide opportunities to embed mathematics into garden activities in authentic ways. (Also see *Math in the Garden* listed in Chapter Twelve – Annotated Bibliography)

The Junior students (Gr. 3, 4, 5) measured while planting seeds and counted seeds in order to calculate germination rate.



The Intermediate class (Gr. 6, 7, 8) created a human sundial (contact me if you would like the instructions) and a co-ordinate grid of the garden area. They did calculations of volume of the raised beds so we knew how much soil we needed.

The Primary students calculated expected harvest dates based on the number of days to harvest recorded on the seed packets. They also measure plant growth. They counted seeds before planting, and from the inside of tomatoes. They counted green tomatoes when making relish. They count cans for recycling and calculate how much money we can get from them. The possibilities are endless, authentic and fun!





CURRICULUM CONNECTIONS

Health and Physical Education

Healthy Living and Physical Education in the Garden

The garden provides opportunities to learn about healthy eating, food groups, senses, and life cycles. Participating in gardening activities has become part of our physical education program and daily physical activity (DPA).

This kindergarten student knows about healthy foods found in the garden!



CURRICULUM CONNECTIONS

Social Studies

Social Studies in the Garden – The garden can be embedded in discussions about many Social Studies units: (e.g. The Local Community; Relationships, Rules, and Responsibilities - responsibilities of themselves and family members; Traditions and Celebrations which often revolve around food; Features of Communities; First Nation Peoples; Urban and Rural Communities).

The Three Sisters – These were the main agricultural crops of some First Nations groups in North America: corn, beans, and squash. It is a version of “companion gardening” in that the three crops benefit each other. The corn provides the structure for the beans to climb; the beans provide the nitrogen to the soil to help the plants grow; and the squash shades the soil, blocking the sunlight, which helps to prevent weeds. This is the U.S. 2009 Native American dollar coin with the Three Sisters on it.



CURRICULUM CONNECTIONS

Language Arts

Language Arts in the Garden – The opportunities for the Language Arts are limitless. The annotated bibliography of children’s books listed in Chapter 12 will get you started. The teacher resources listed there also will be helpful. There is a myriad of lessons and information on the internet—so many that my listing them here would be redundant.

As a Primary Teacher, I love Lois Ehlert and her books (see Chapter 12). To show how you can integrate Language Arts, Math, Science, Visual Arts, Music, Dramatic Play, Environmental Education, Character Education, and Health, I’ll list the activities for just one of Ehlert’s books: *Growing Vegetable Soup*. (These activities are from Ehlert’s Resource Book from Scholastic.)



Language Arts – Read Aloud: activate prior knowledge about vegetables and growing plants and soup. After reading, invite students to retell and build sequencing skills by reviewing the steps taken by the girl and her father. Compare and contrast this book with the old fairy tale, *Stone Soup*.

Visual Arts: Veggie Vision Print Art. We used green potatoes for this, as they are not edible when green (it means they were not killed when growing).

Science: How do plants eat? Put celery stalks into coloured water. Also, use grocery flyers and cut out vegetables. Make a horizontal line on chart paper and title each half —**Above**” and —**Below**.” Have students take turns putting the vegetables in the appropriate spot as to whether they grow above or below the ground.

Music and Dramatic Play: Review different gardening tools and their purpose. Act out the motions used for each tool. Sing to the tune of “This is the Way We Wash our Clothes”: This is the way we dig the soil, dig the soil, dig the soil; This is the way we dig our soil, so early in the morning.”

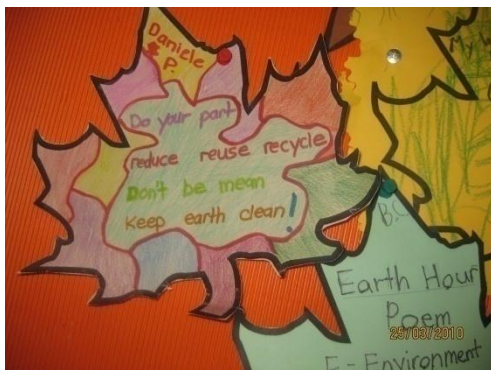
Math and Science: Seed or Seedless? Make a T-chart and have students predict whether a vegetable will have seeds inside or not (carrot, cucumber, tomatoes, celery, etc.). Cut them open to confirm.

Character Education, Language Arts, Cooking, Health: Make Group Soup! Reinforce the concepts of teamwork and cooperation by making soup. As a writing extension, have the students make a list of the ingredients and steps they used to make the soup.

A CURRICULUM CONNECTIONS

The Arts – Visual Arts

Visual Arts in the Garden – The Arts curriculum document (2009) has been revised to reflect environmental education: Each subject's curriculum document will go through the revision stage in a similar manner. —There are many opportunities to integrate environmental education into the teaching of the Arts. Nature often provides an inspirational starting point for creativity in both representational and more abstract art forms (The Arts, p. 49)."



It goes on to say —The arts can also be used as powerful forms of expression for students to use to explore and articulate the social and political impact of issues related to the environment (p. 49)."

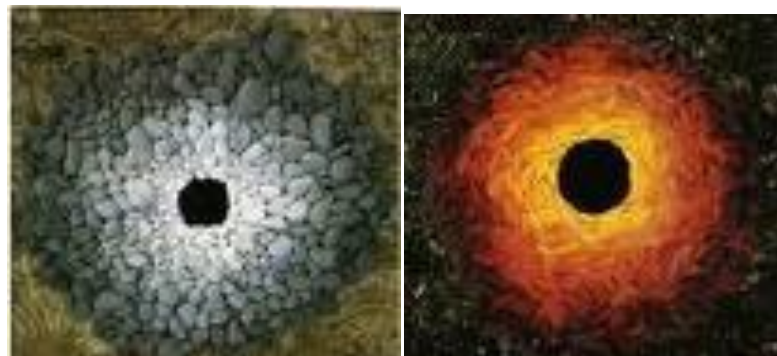
This poem from our Environmental Earth Day Poet-tree is a good example of social activism.

Our entire school accepted a Board challenge of articulating our wish for the Earth by using poetry as a medium. Even our custodian, bus driver, and school secretary wrote a poem, along with 100% of students and staff.



We have to think outside the classroom when planning our Visual Arts. There does not always have to be a product that can be stuck on the fridge after a Visual Art lesson. The tracks in the snow to the left can be used to teach the elements and principals of design: one-point perspective, balance, unity, space (cast shadows), patterning, etc. Beading on Aboriginal clothing mimicked the patterns found in animal tracks.

For more outdoor ideas for Visual Arts, check out Andy Goldsworthy's work using leaves and rocks: environmental art – made to disappear.



We used birchbark from my woodpile at home to do this acrylic painting to meet the Grade 8 expectation: use of line, colour, and shape in the style of Norval Morriseau. The black line represents connectedness.



Theme Days – Potato Math Day

We had a school-wide —Potato Math Day” celebrating the amazing potato! On this day, all students were involved in math activities related to the potato. The Primary class (Grades SK, 1, 2) learned about doubling facts after reading a book called —One Potato, Two Potato.” The Intermediate class (Grades 6, 7, 8) found through their math calculations that it is more economical to cut potatoes when planting them as they produced more potatoes than planting whole potatoes. They also compared our potato yield to the yields recorded by previous Upsala residents. The Intermediate class compiled the information to be included in —The Upsala Potato Book” (see Page 34). The Junior students typed some of the recipes during their computer keyboarding class. Also on Potato day, fiction and non-fiction books were read about potatoes. Venn diagrams were used to compare books. Daily Physical Activity included digging potatoes, scrubbing potatoes, and mashing cooked potatoes.

Ordering potatoes from smallest to largest.



Making it balance



Lunchtime favourite potato vote



Potato printing with green potatoes (potatoes turn green when they are exposed to sunlight – don't eat those. They are not edible)



The intermediate class calculated our potato yield and compared it to the potato yields recorded in the Upsala History Book, known as the “Fweedsmuir.” These students also calculated the yield from cut potatoes planted compared to whole potatoes.

The frost has definitely stopped the garden growth! We have harvested peas, tomatoes, onions, pumpkins, carrots, and herbs. We have started turning over the soil and removing grass and weeds to make next spring's work easier. Thanks again to all the families who helped with the garden this past growing season. We couldn't do it without you!

Family Potato Math Event

On Friday, October 16, 2009, we will be having another family math event. This time it will focus on the amazing potato! We will be digging up the last of the potatoes that day. Please come and join us for part or all of this celebration! PLEASE SEND IN YOUR FAVOURITE POTATO RECIPE AND CALL OTHER RELATIVES AND FRIENDS TO GET THOSE SPECIAL POTATO RECIPES. SEND THEM IN ASAP!



Time	Participants	Event
9:30 – 10:30	Intermediate	<u>DPA</u> - Dig potatoes with Mr. Craig. Count and record yield.
	Primary and Junior	<u>Language Arts</u> - Buddy/Reading - Potato books Fiction - Venn Diagram comparisons between books Non-Fiction - Potato facts Juniors to weight, measure, scrub and dry potatoes.
10:40 – 11:05	All	Snack and outdoor activity break
11:05 – 11:45	Intermediate	<u>Math</u> - Calculate yield using planting calculations from the spring (recorded in Planting Journals). Determine whether cut potatoes or whole potatoes produced more or less potatoes. (Mr. Craig)
	Primary	<u>Math</u> - Count potatoes - make groups of 10 Sort potatoes - big/little; bumpy/smooth; heavy/light
	Junior	<u>Keyboarding</u> - Begin to type potato recipes for our Potato Recipe Book using template designed in Computer Class.
11:45 – 12:45	Parent volunteers peel and boil potatoes for lunch (3 kinds of mashed potatoes - plain, cheese, garlic) (Juniors to help mash potatoes once cooked).	
	Intermediate	<u>Language/History</u> - Research on record potato yields produced in Upsala - to be included in recipe book.
	Junior	<u>Math</u> - Create chart for favourite mashed potato vote and begin conversions for recipe book. (Mr. Craig)
	Primary	<u>DPA</u> - Play "Hot Potato" <u>Literacy/Math</u> - Read/Aloud - "One Potato, Two Potato" Introduce/review doubles.
12:45 – 1:30	All	Lunch and outdoor activity break
1:30 – 2:45	Primary and Junior	<u>Visual Art/Math</u> - Cut green potatoes in half and in quarters Use them for printmaking - patterning. (Mr. Craig)
	Intermediate	<u>Computers/Visual Art</u> - design cover and divider pages for potato recipe book - graphics and text
2:45 – 3:05	All students	Daily Journal Writing - What did you learn about potatoes today?

Yours truly,

Mrs. Shirley Niemi
Lead Teacher – Children's Garden Project

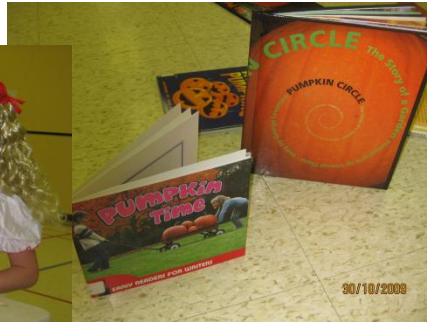
Approved by:

Mrs. Cheryl Lysak, Principal

Pumpkin Math Day

Our school's October 31st Theme Day focused on the pumpkin! There were math activities related to estimating circumference, weight, number of seeds in relation to size, and comparing the cost of pumpkins. An extremely enjoyable day with great math learning experiences!

Estimating and counting seeds



Literacy integration

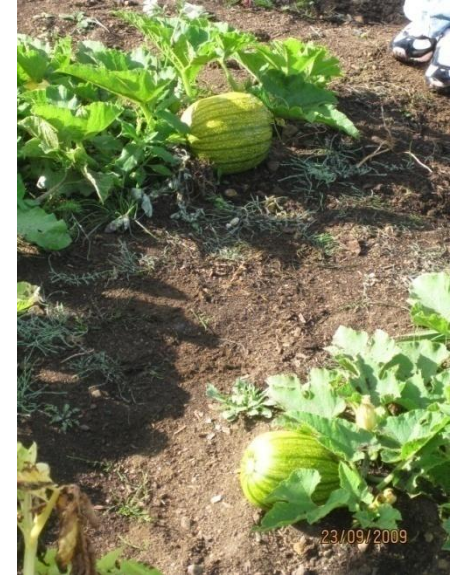


The Students in the intermediate class organized the events and supervised the younger students during the Pumpkin Math Day. Themed days using the garden are fun, hands-on, authentic (don't you want to know who has the cheapest pumpkins?), and a great learning experience for kids!

Even though we were given special pumpkin seeds by a local resident, we have yet to produce good pumpkins. The first year, we had a miscommunication and thought that the flowers had to be picked off so the fruit could form. This resulted in no pumpkins being pollinated and, therefore, no pumpkins. Pumpkins produce both male and female flowers. The male flower does not form fruit, but is necessary to pollinate the female flower. We thought we had a shortage of pollinators, but what we had was a shortage of flowers left on the plants!

The second season, we did get some pumpkins, but they were still small and green when we had to pick them (to avoid frost). They rotted before they could turn orange. We were told by many gardeners that the gardening season of 2009 was poor, so it could have affected our pumpkin growth.

This year we will try again (gardening takes patience and persistence)! We now know about the flowers and pollination. We have created a habitat for pollinators in our Infinity Garden. We are going to buy enclosures to protect our pumpkin plants from frost. We are hopeful this year that we will have our own pumpkins for our Pumpkin Math Day!



Character Education in the Garden - Our school focuses on one character value per month and practices them in a cumulative manner. The ten values chosen in concern with our community are: Respect, Responsibility, Cooperation, Compassion, Self-control, Tolerance, Trustworthiness, Fairness, Perseverance, and Integrity.

The school garden offers an excellent way to teach **respect** for the land, **responsibility** for living things, **cooperation** with others in getting garden work completed, **perseverance** and **patience** in trying again and again when something doesn't grow well, **fairness** and **sharing** of the harvest, and **compassion** and **caring** for the earth.



CURRICULUM CONNECTIONS

Mathematics – Big ideas – estimating, measurement, counting, place value

CHAPTER TWELVE – Annotated Bibliography

Bunting, Eve (Author); Hewitt, Kathryn (Illustrator). (1994). Harcourt, Inc.: New York, NY.

A story showing that gardening can happen anywhere: even in window boxes in a city.

Age: Primary

Big Ideas: Language: Rhyming, Prediction, Making Personal Connections; Social Studies: Rural and Urban Communities; Science: Habitats.



Bunting, Eve (Author); Hewitt, Kathryn (Illustrator). (1996). Sunflower House. McGraw-Hill Companies: New York, NY.

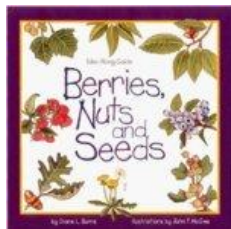


A story about growing and playing in a house made of sunflowers.

Age: Primary-Junior

Big Ideas: Language: Story structure, inferencing, visualizing; Health: Life Cycles.

Burns, Diane L. (Author); McGee, John F. (Illustrator). (1996). Berries, Nuts and Seeds: Take-Along Guide. NorthWord Books for Young Readers: Minnetonka, MN.



A guide book for 30 plants common to Northern Minnesota and Northern Ontario. Includes interesting facts, where to find plants, what eats it, activities.

Age: Primary-Junior-Intermediate

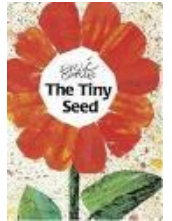
Big Ideas: Plant recognition; Concepts of information texts; Interconnectedness of plants and animals.

Carle, Eric. (1987). The Tiny Seed. Picture Book Studio Ltd.: Saxonville, MA.

The story of a flower whose seeds undergo many challenges before finding a spot to grow into a new flower.

Age: Primary

Big Ideas: Life Cycle of a Plant, Seasons, Prediction; Visual Arts: cutting paintings and splattering techniques.

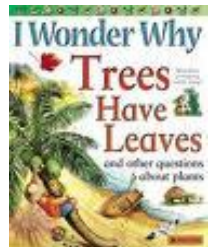


Charman, Andrew. (2003). I Wonder Why Trees Have Leaves and Other Questions About Plants. Kingfisher Publications: Boston, MA.

Question and answer format with interesting facts (e.g., why do roots grow so long; why are stems so straight).

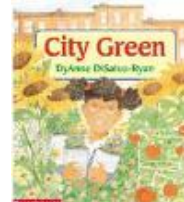
Age: Primary-Junior-Intermediate

Big Ideas: Information Text in question and answer format; Daily Read Aloud.



DiSalvo-Ryan, DyAnne. (1994). City Green. Scholastic Inc.: Toronto, ON.

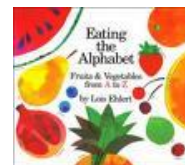
A story of a group of citizens who turned a vacant city lot into a community garden. Contains information on how to start a community garden.



Age: Primary-Junior-Intermediate

Big Ideas: Community gardens; Growing food; Character Value: persistence vs. pessimism; Community activism.

Ehlert, Lois. (1989). Eating the Alphabet: Fruits & Vegetables from A to Z. Scholastic Inc.: New York, NY.



A colourful picture book of interesting fruits and vegetables. Includes a glossary of all fruits and vegetables in the book.

Age: Primary

Big Ideas: Letter recognition, Letter sounds, Healthy Eating: introduction of familiar and unusual fruits and vegetables.

Ehlert, Lois. (1987). *Growing Vegetable Soup*. Harcourt Brace Jonanovich, Publishers: Orlando, FL.

A father and child grow vegetables and then make them into a soup.

Age: Preschool-primary

Big Ideas: Growing own food; Healthy Eating; Nutrition.



Ehlert, Lois (1988). *Planting a Rainbow*. Harcourt Inc.: Orlando, FL.



A cute story about planting bulbs, seeds, and seedlings together and watching the rainbow grow!

Age: Preschool – Primary

Big Ideas: Flower plants can grow from bulbs, seeds, or transplanted seedlings; Colours; Seasons; Growth cycle; Sequencing.

Ehlert, Lois. (1991). *Red Leaf, Yellow Leaf*. Harcourt Books: Orlando, FL.

The story of a maple tree's trip from the forest, to the nursery, and then to be transplanted into someone's yard. Includes information in the back of the book about roots, sap, leaves, seeds, bark, planting information, etc. of a maple tree.

Age: Primary-Junior

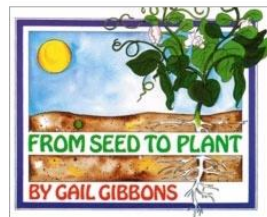


Big Ideas: Planting and Transplanting a tree; Science: Growth and Changes in Plants; Mathematics: Sorting and graphing leaves by colour, size; Language: tree terms.

Gibbons, Gail. (1991). *From Seed to Plant*. Holiday House: New York, NY.

The mystery of how seeds are formed and grow into plants is revealed for young readers.

Age: Primary-Junior-Intermediate-Adult



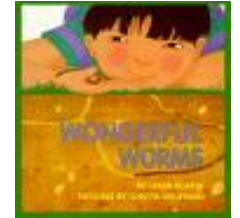
Big Ideas: Plant propagation; Labelled diagrams of plant parts for reproduction; Pollinators.

Glasser, Linda (Author), Krupinski, Loretta (Illustrator). (1992). *Wonderful Worms*. Scholastic Inc.: Toronto, ON.

A story about earthworms, how they live, and how they help plants grow. Includes a section on worm facts.

Age: Primary-Junior

Big Ideas: Earthworms; Composting; Pesticides; Worm facts and anatomy.



Heller, Ruth. (1983). *The Reason for a Flower*. Putnam Publishing Group: New York, NY.

Beautifully illustrated book describing how pollen is transferred to flowers which manufacture seeds.

Age: Primary-Junior-Intermediate

Big Ideas: Pollinators and their habitats; Seeds form in different ways; How seeds travel.



Henderson, Kathy. (2003). *And the Good Brown Earth*. Candlewick Press: Cambridge, MA.

A story of a boy and his grandmother and how they work with the seasons and the good brown earth.

Age: Primary-Junior-Intermediate

Big Ideas: Character values: Patience, responsibility, cooperation; Seasons.



Jordan, Helene J. (Author); Krupinski, Loretta (Illustrator). (1960). *How a Seed Grows*. Harper Collins Publishers, Inc.



Uses observations of bean seeds planted in eggshells to demonstrate the growth of seeds into plants.

Age: Primary-Junior

Big Ideas: Science: Growth and changes in plants, scientific discovery method; Mathematics: Data management, graphing.

Kalman, Bobbie. (2000). *What is a Plant. The Science of Living Things*. Crabtree Publishing Company: St. Catharines, ON.

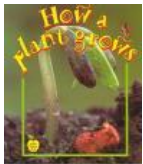
This book introduces plant life, discussing specific types such as carnivorous and parasitic plants, and concepts such as single cells, germination, and photosynthesis. Includes glossary and index.

Age: Junior-Intermediate-Adult

Big Ideas: Information text on plants for research projects;



Kalman, Bobbie. (1997) *How a Plant Grows*. Crabtree Publishing Company: St. Catharines, ON.

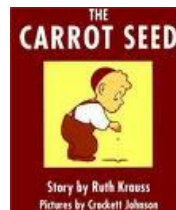


This book examines the stages of a seed plant's development—germination, photosynthesis, and pollination and includes activities on how to grow plants.

Age: Junior-Intermediate-Adult

Big Ideas: Information text on plants for research projects; Growth and changes in plants.

Krauss, Ruth (Author); Johnson, Crockett (Illustrator). (1945). *The Carrot Seed*. Harper Row, Publishers, Inc.



A timeless classic story of a little boy who continues to believe his seed will grow despite his family's opinions to the contrary.

Age: Primary

Big Ideas: Character values: persistence, responsibility.

McMillan, Bruce. (1988). *Growing Colors*. Harper Collins Publishers.



Contains photographs of plants and garden produce in different colours as they grow in nature. Shows a variety of vegetables that grow in, on top of, or above the ground.

Age: Preschool-Primary

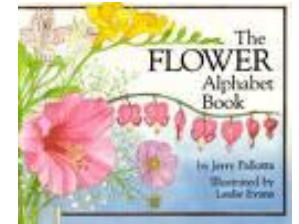
Big Ideas: Colours; Identification of plants and corresponding fruit; Photography.

Pallotta, Jerry and Evans, Leslie. (1988). *The Flower Alphabet Book*. Charlesbridge Publishing: Watertown, MA.

Describes a variety of flowers from A to Z, beginning with the amaryllis and concluding with the zinnia. Includes interesting information such as which flower flavours tea, and which flower farmers feed to chickens.

Age: Primary-Junior

Big Ideas: Flower recognition and appreciation; History and origin of selected flowers.



Pallotta, Jerry and Thompson, Bob (Authors); Stewart, Edgar (Illustrator). (1992). *The Vegetable Alphabet Book*. Charlesbridge Publishing: Watertown, MA.

Contains interesting facts about a variety of vegetables from A to Z, including information on Victory Gardens.

Age: Primary-Junior-Intermediate ('The Alphabet: Not Just for Little Kids Anymore')

Big Ideas: Characteristics of plants and plant recognition; soils in the environment.

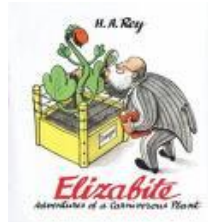


Rey, H.A. (1942). *Elizabete: Adventures of a Carnivorous Plant*. Houghton Mifflin Company: Boston, MA.

An adventure story of a carnivorous plant that eats insects as appetizers and enjoys hot dogs for snacks.

Age: Primary-Junior

Big Ideas: Venus Fly Trap; Carnivorous plants; Rhyme and rhythm.

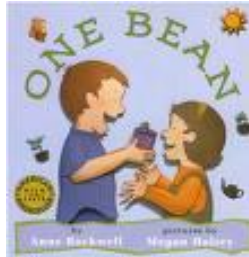


Rockwell, Anne (Author). Halsey, Megan (Illustrator). (1998) *One Bean*. Walker and Company: New York, NY.

You will never go hungry if you have at least one bean. A beginner's science discovery book.

Age: Preschool-Primary

Big Ideas: Science: Needs and Characteristics of Living Things; Observation. Character values: patience, self-control.



Tamar, Erika (Author), Lambase, Barbara (Illustrator). (1996). *The Garden of Happiness*. Harcourt, Inc.: Toronto, ON.

A young girl plants a sunflower seed in a small patch of the neighbourhood community garden, but is sad when the plant dies in the winter.

Age: Primary-Junior

Big Ideas: Community gardening; Life Cycles; Ethnicity; Character values: Cooperation, responsibility, tolerance

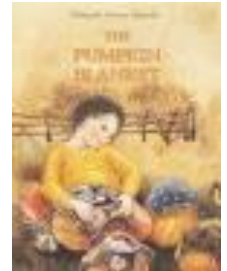


Zagwyn, Deborah Turney. (1995). *The Pumpkin Blanket*. Tricycle Press: Berkeley, CA.

A touching story about a child who tries to protect the pumpkins in her garden from frost by using parts of her own childhood blanket to cover them.

Age: Primary-Junior

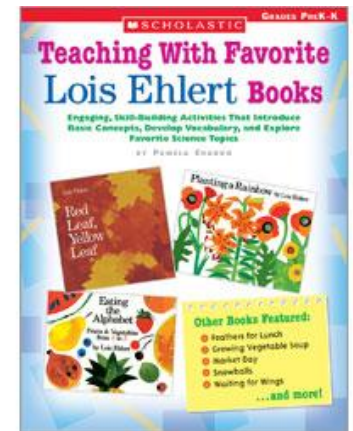
Big Ideas: Pumpkins; Seasons; Autumn; Growth and change in humans; Art: Bird's Eye View, Close-up, Zoom-in, Perspective.



Selected Teacher/Garden Leader Resources

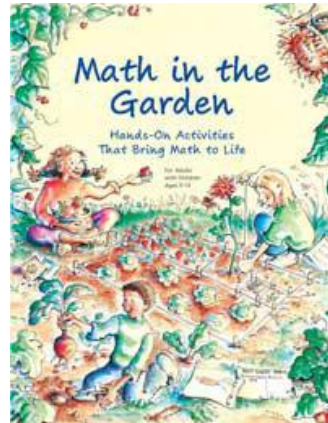
Chanko, Pamela. *Teaching with Favorite Lois Ehlert Books: Engaging, Skill-Building Activities That Introduce Basic Concepts, Develop Vocabulary, and Explore Favorite Science Topics*. Scholastic, Inc: Toronto, ON.

This is a great resource for Primary. It uses several of Lois Ehlert's garden-related books and gives activities for Science, Music, Drama, Math, Language Arts.



White, Jennifer D. et al. *Math in the Garden: Hands-On Activities That Bring Math to Life.* (2006) University of California and the National Gardening Association.

Patterns, measurement, comparisons, and problem solving are a few of the mathematics strands embedded in typical gardening activities. This book contains ready-made activities for students aged 5-13.



HOLE, Lois. *Perennial Favourites.* (1999) Lone Pine Publishers and Lois Hole. Edmonton, AB.

Contains information on 100 of Lois's favourite perennial plants, chosen for their beauty and hardiness.



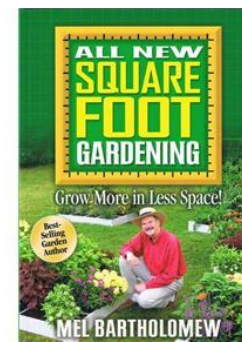
Hole, Lois. *Favorite Trees & Shrubs.*

This books contains planting instructions, growing preferences, species information, etc. for hardy trees and shrubs.



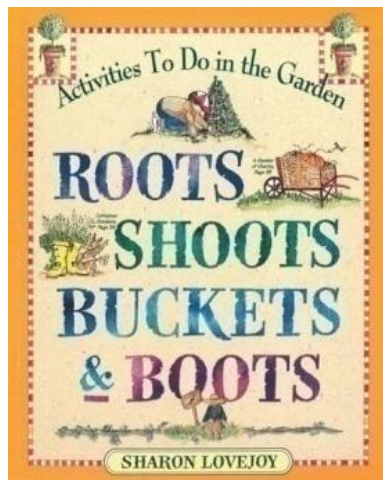
Hole, Lois. *Vegetable Favorites.*

You can tell that I love Lois Hole's books! They are practical and easy to follow. The plants are alphabetized and cross-referenced. The main thing I like is that they are well-suited to our northern climate.



Bartholomew, Mel. *All New Square Foot Gardening.*

Grow more produce in less space with less water. Easy for the beginner gardener.



Lovejoy, Sharon. *Roots, Shoots, Buckets & Boots: Activities to Do in the Garden.* (1999) Workman Publishing: New York, NY.

Activites and projects to connect children to nature through gardening. Contains ideas for creating a sunflower house, bean tunnels, and pizza patches.

Saunders, Graham. *Gardening With Short Growing Seasons.* (2009) Food Security Research Network and Graham Saunders: Thunder Bay, ON.

An easy-to-read guide for gardeners in northern climates. Helpful information about helping vegetables and herbs reach their full potential.



CHAPTER THIRTEEN – Other ideas and plans

Shade Area - Our shade area was created by using shade sails purchased from Canadian Tire. I purchased metal posts which we dug into the ground and secured with concrete. The sails proved to be difficult to hang and flapped loose in the wind. My husband rigged up some bungee straps to keep the sails secure. I took pictures of it the first year so that we can do the same each year when we put them up.



The shade sails cost \$59.99 each (we have two) (they were on sale – regular price was \$99.99. I needed 44 feet of 3" metal pipe. My husband cut it into four 11' lengths and painted them for me. The pipe cost \$258.00. (Thanks to Fab-Mar Metals in Thunder Bay who gave us the pipe at cost.) We obtained some concrete mix from the local Recreation Committee for free. You need to make sure the pipes are deep enough in the ground so the frost doesn't heave them.

Sand Play Area – We had some sand on the primary side of the school yard where the little ones sometimes liked to play with pails and shovels and toy trucks and cars. We had four 16' pieces of cedar left over so we used them to create a contained sand play area. It was amazing how the students loved that sand area after putting up the edge to define it!



Sunflower House – We found an idea for building a Sunflower House in *Roots, Shoots, Buckets & Boots* (see Chapter Twelve – Teacher Resources). The idea was to plant sunflowers in a circle shape, leaving an entranceway open. A vine called Morning Glory is then planted in between the sunflowers. They are supposed to twine around the sunflower stalks and meet over the sunflowers to form the roof. We dug our area, planted our sunflowers and Morning Glory seeds, and hoped for the best. Except that we forgot to tell our custodian what we were doing. Just after school let out in June, he was using his weedeater around the yard and snipped off our house! Lesson learned: tell the custodian what you are doing!! This is the area where we were going to have the sunflower house – we'll try again next year!



Plant Information Binder – It is important to keep track of what you plant in each location. I kept all of the plant tags and put them in a labeled binder. I photocopied or printed off information about each plant, shrub, or tree, for future reference. For example, I know that we planted a shrub called —Nannyberry— Latin name: *Viburnum Lentago*. In the binder under —Nannyberry— I have information printed from the USDA (United States Department of Agriculture), the tags from the plants, and a photocopy of the page out of Lois Hole's book (I know she wouldn't mind). We use these as references because I would never remember that —Nannyberry blooms for about two weeks in spring with attractive clusters of creamy white flowers from 3-4 ½ inches across and is also known as Sheepberry or Wild Raisin" (Hole, p. 234). It takes a bit of time to get it organized, but it is worth it.

Garden Signs – Another way to remember what's what is to purchase some permanent garden signage. I got engraved plastic plaques (the kind executives use on their doors). My husband made stakes from cedar and screwed the signs onto them. It cost \$104.00 for 15 signs. I would only buy them for the perennials, trees, and shrubs. It's nice for visitors too.



Garden Benches – Part of the process for the funding from Toyota Evergreen Learning Ground was to include plans to be used for garden seating. I sent in a basic bench plan and they approved it. My husband made three cedar benches in his woodworking shop (he liked the plan so he made our son-in-law one for Christmas last year too).



Human Sun Dial – This sun dial works by shadows cast on marker stones. The intermediate students worked with a university student hired through the Tutors in the Classroom program to create it. It took the university student several hours to do the calculations based on the longitude and latitude of the school.



Living Tent – Grapes have been planted around the old swing set. Wire netting to support the grapes has been secured to the frame of the swing set.



Grapes growing on the swing set to form the "Living tent."

Wildlife Deterrent - My husband made this prototype of a cage to protect plants from wildlife. It is made from 16 gauge Stucco Mesh, fits on a 4' x 4' raised bed and is 2



feet high. I'm hoping it will work for keeping deer from eating vegetables. If anyone has a deer problem and would like to try this, let me know. If it works, it would be much cheaper than fencing.

CHAPTER FOURTEEN – Some Final Words

Evidence of Environmental Education in the Classroom:

Look for evidence of Environmental Education (EE) and Education for Sustainable Development (ESD). Evidence to look for during a walk-through:

- the context of the learning being meaningful and connecting with the relationships between human and natural systems
- active learning experiences relating to the human and natural environment
- an approach of critical thinking, problem solving, inquiry, systems thinking or futures thinking used as a way of learning
- character development fostering informed, responsible, active and respectful students
- appropriate literacy and numeracy strategies embedded to help students learn within an EE/ESD context
- waste minimization containers are readily available and easy to use
- GOOS paper (Good On One Side) is readily available
- lights/computers and other electrical devices are off when people are not in the room
- hallways/walls visually reflect the local community
- photocopiers and printers are in good working condition to support the wise use of paper
- students work through controversial issues in a respectful manner
- different perspectives on issues are presented
- wide student participation in a variety of initiatives relating to Environmental Education
- students participate in out-of-doors experiences
- students and staff interact between school and local community initiatives relating to EE/ESD
- students and staff interactions between national and global communities are fostered
- opportunities for staff learning relating to EE/ESD are provided and supported

Johnston & Wallace, 2009.

A Word of Caution

You are probably reading this book because you are passionate about starting a garden at your school and looking for ways to embed environmental education. However, remember that, just because you think something is worthwhile and doable, not everyone will always agree with you. Make sure that you introduce other staff to the plans in small steps so that they can see firsthand the benefits. This takes patience and respect. Teachers are usually very busy. Introducing yet another thing into their hectic schedules can turn them against any project you might propose.

Celebrate!!

Enjoy the garden! Don't make it all about work—make it about fun! Have a garden tea; have a Teddy Bear Picnic; eat lunch outside; take advantage of the fun along with the learning and the kids will feel the passion. It's contagious!



Upsala Public School Children's Garden – September, 2009





This book is for educators, schools, and school boards.

Environmental Education is to be embedded in all subjects in all grades (Ontario Ministry of Education, 2009)

Learn how to create and use a school garden to teach the curriculum in an authentic, hands-on, experiential way!



Contents include curriculum connections and “Green Ideas” throughout.

Based on the author’s experiences during the creation of the “Upsala Public School Children’s Garden” — a happy place to grow and learn!